Changing Scenario of Cereal - Millet Consumption Patterns

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Abstract: Millets are rich in proteins, fiber, vitamins and minerals they are called as Nutri Cereals. Changing lifestyles, urbanization and industrialization resulted in obesity which led to the change in the staple cereal rice or wheat to millet consumption. The present study aims at analyzing the changes in the dietary patterns and its relation to health status among 240 high-income people, randomly selected. Semi structured pretested questionnaire was used to collect information. Educational level of the respondents indicate that Engineers, post graduates and doctors together constituted 40.3 percent inmales and 29.7 percent among females. Majority are Nuclear families (82.5 percent). The dietary pattern showed that rice eaters who normally take rice twice a day are now only 11.3 percent and once aday are 53.8 percent, the rest are taking irregularly. Wheat eaters consuming twicea day are 9.6 percent and those taking daily are 45 percent. Barley is taken either in summer or whenthey have a medical issue. Quinoa, Oats, cornflakes are taken occasionally for variety purpose. The percent consuming is 21.8, 56.1, and 53.9 respectively. With respect to millet consumption, all respondents are taking millets daily. The millets used are Ragi by 63.6, soghum by 58.3, bajra by 76.1, Maize by 73.7, samalu 41.7, varagalu 51.7, korralu 73.7 percent, udhalu 30.8, Arekelu 48.4 and anukorralu 61.7 percent respectively. They expressed that they take one type of millet each day ensuring that every day they consume any one type of millet. The shift from rice to millet consumption resulted in soaring prices of millets taking millets away from the low income group diets.

Keywords: Millets, Nuclear families, High income group, Nutri cereals

1. Introduction

Millets are coarse grains and a repository of proteins, fiber, vitamins and minerals, they are categorized as Major millets - sorghum, pearl millet (bajraPennisetumglaucum) and finger millet (Ragi - Eleusinecoracana). Minor millets : fox tail millet (Kokkum- sefariaitalica)- Prosoor common Millet (chenna/Barri- panicummiliaceum), sanwa, barnyard millet.echinochloacrusagali) Millets are also called as Nutri Cereals as they have many nutritional significances and health benefits like - Millets hydrate the colon to avoid constipation, the high levels of tryptophan in millets produce serotonin which is known for calming of the moods of people. Magnesium can help the effects of migraines and heart attacks, niacin lowers cholesterol, millet consumption decreases the triglycerides and C reactive protein which lowers cholesterol level , . All millets have anti-oxidant properties . Millet is gluten free and non-allergic. If properly stored they can stay up to 2-3 years.(1,2,3) Millets have been the major staple food in Central India, South India, and hilly regions of Uttarakhand.(4) In 1970's due to the production of high yielding varieties of rice and wheat, milletswere sidelined from our food basket.(5,6) With passing of the food security bill and distribution of rice at subsidized rates, millets got withdrawn from the dietsof low income groups(7,8))The food security bill resulted in a shift from the higher nutritive value millets to consumption of fine rice among the poorer sections of population resulting in malnutrition –undernutrition (9).

Among the high income groups, consumption of polished rice, refined wheat flour coupled with sedentary lifestylesand has led to rise in malnutrition in the form of overweight /obesity.Obesity related non communicable diseases like diabetes, hypertension and heart attacks across age groups have increased. Medical Practitioners, dietician's bank on millet nutrient composition,. This resulted in sharp rise in millet prices in the market. Millets had a tag as "Poor man's food" once upon a time, became the rich man's diet. The shift in the staple grain consumptionpattern among high and low income groups, led to major changes in the dietary patterns (10, 11). Such studies in the state of Telangana are scanty. The present study aims at assessing the consumption of pattern of millets among the high-income groups. The results of thestudy willprovide useful information for planners and administrators.

2. Methodology

Two hundred forty people with a monthly income of Rs. 1to 2 lakhs from various categories – professors, businessmen, engineers, doctors, chartered accountants, pharmacists were randomly selected to assess the consumption pattern of millets among high income families. Semi structured questionnaire was prepared to collect demographic information consisting of age, type of family, type of diet, occupation, education ,frequency of consumption - as two times/day, daily, alternate day, twice in a, week once week, most often and not using. Market survey was done to record available millets and the rates. Millets available in the market and generally consumed are listed.The reasons for the shift in the practices from rice and wheat to millets was collected. Cereals and millet consumption pattern was collected for the following foods:

Cereals: Rice, brown rice and rice products (rice flakesand puffed rice)Wheat and whole flour, refined flour, vermicelli, semolina and brown bread..

Millets:Sorghum, Maize, Bajra,Ragi Samalu, Varagulu, Korrulu, Udhalu, Arekelu,Andukorralu.

Other Cereals: Oats, Cornflakes and Quinoa.Data is presented as percentages and the purpose of consumption as description.

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3. Results and Discussion

Demographic Profile: Age of respondents ranged between 20-80 years. Majority (81.7 percent) are in the age groups between 21 and 50 (Table1)

Table 1:	: Age	wise	Distributi	on of F	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 (82.5 percent), joint families are 4.2 and extended families or families with one of the in laws are to the tune of 13.3 percent. (Table 2) 85.7 percent are non-vegetarians while only 14.3 percent are vegetarians.

Total number of members in each family varied from 2 to 10 members. Most of them are with 3, 4 or 5 members indicating one or two children per family. (Table 3).There are two families above ten members, they are joint families.

Table 2: Type of family

Type of family	%	No
Nuclear	82.5	198
Joint	4.2	10
Extended	7.9	19
One-in law	5.4	13
Total	100	240

Table 3: Family Size									
No of persons	Total								
no or persons	%	No							
2	12.1	29							
3	20.8	50							
4	33.8	81							
5	23.4	56							
6	7.5	18							
7-10	2.4	6							
	100	240							

Educational status of all members in the family is presented in Table 4. Males with B. Tech and M Tech qualifications are 19.5 percent, among females the percent is 13.7 . Doctors are 3.6 and 2.9 percent among males and females respectively. Postgraduates are more in females (20.3%) than males (17.2~%) None of the malesare with $10^{\rm th}$ qualifications, in females, $10^{\rm th}$ and Intermediate are 9.7 and 29.7 percent. Overall picture indicates that both males and females are highly qualified, can therefore influence food selection and food consumption behavior.

Table 4: Educational Status of Family Members

Education	Ma	les	Fem	ales	Total		
Education	%	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	
PGs	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

Consumption Pattern of Cereals: The general practice in the Telugu States is to take rice twice in a day –afternoon and night. (3). In the present study rice is being consumed twice a day by 11.3 percent.. The percent taking rice once a day is 53.8 percent .There is a small percent 0.8 to 9.6 who switched over to consuming brown rice daily as it reduces blood sugar levels among diabetes. Parboiled rice is used mostly for breakfast items like idly and dosaby 0.8 percent daily ,while 9.6 percent took once a week and 36.2 percent occasionally. Rice flakes and Puffed rice areused to prepare snacks for children.(Table 5)

Consumption of wheat and wheat products is given in Table 6. Wheat is available in the form of whole wheat flour, rava, refined flour (Maida), vermicelli and semolina (Suji or Rava).Wheat flour is used mainly in making paratas, pulkas, chapatti /rotisetc consumed as a staple item, mostly for dinner, among non-telugu people, it is taken twice in a day as a staple food, 9.6 percent consume twice daily and 45 percent once daily.Vermicelli and Semolina (Suji) are used for making snacks, sweets and breakfast items . Brown bread is recently introduced into the market, people are preferring brown bread as they feelit is good for health. Consumption of other grains: (Table 7) Barley is used by two people twice a week and by one person once a week, they consume for free flow of urine. Quinoa is used for breakfast with vegetablesor as a meal instead of rice for variety by 21.8 percent occasionally. Families who are exposed to foreign culture used Quinoa. Oats and cornflakes are used for breakfast along milk. Oats are also consumed in the place of rice for lunch or dinner, it is consider to reduce weight. Percent using oats twice /one a week are 6.5 each and those consuming occasionally is 56.1 percent. .

Casing	2/w	eek	1/w	/eek	Occasional		
Grains	%	No	%	No.	%	No	
Barley	0.9	2	0.4	1	35.2	81	
Quinoa	0.4	1	0.9	2	21.8	50	
Oats	6.5	15	6.5	15	56.1	129	
Corn flakes	6.5	15	7.4	17	53.9	124	

Table 7: Consumption of Coarse Cereals

Consumption of millets: Commonly consumed millets are listed in Table 8 .All 240 respondents said that they eat millets, but the variety differs. Unlike rice there is no one type of millet that is consumed daily. Consumption starts from alternate day (3 times in a week), twice a week, once week or occasional (whenever feel like) Ragi is madeinto porridge and consumed with milk or with buttermilk.some said they make sankati (Rice and Ragi powder) Diabetic people reported taking daily .All millets are cooked as rice and taken with curries or dhal or curds.7.8 percent people reported consumingsorghum three times ina week Most of the people eat only millets for six days in a week and on Sunday they eat rice. Those consuming once a week ranged from 2.6 to 35.8 percent in a week. Most of respondents are at either at prediabetes stage or diabetic or with hypertension or having cardiac problems or overweight /obese category The blood reports have shown improvement inweight loss and blood pressure and fasting sugar levels.

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4. Conclusion

The study found that though the cereal consumption has not declined drastically but a shift to millets is evident. There is need for administrators to plan ways to reduce prices of millets in order to make them accessible to lower income groups, as they constitute the major percent of Indian population.

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Table 5. Consumption 1 attent of Rice and Rice 1 foldets											
E	Rice		Brown	n Rice	Par boiled		Flakes		Puffed		
riequency	%	No.	%	No	%	No	%	No	%	No	
2/day	11.3	26									
1/day	53.8	129	0.8	2	3.3	8	0	0	0	0	
3/week	28.7	69	1.3	3	7.1	17	5.8	14	5	12	
2/week	2.5	6	2.1	5	3.3	8	7.1	17	12	28	
1/week	0	0	9.6	23	12.5	30	28	66	24	57	
Occasional	0	0	36.2	87	27.9	67	53	128	57	137	
Never	0	0	50	120	45.9	110	6.3	15	2.5	6	
Total	100	240	100	240	100	240	100	240	100	240	

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Table 5: Consumption Pattern of Rice and Rice Products

Table 6: Consumption Frequency of Wheat Products												
Wheat Products												
D	Flo	our	refined		vermicelli		sem	olina	Brown	Bread		
Frequency	%	No.	%	No	%	No	%	No	%	No		
2/day	9.2	22	0	0	0	0	0	0	0	0		
1/day	45	108	0	0	0	0	0	0	0	0		
3/week	9.6	23	5	12	3.8	9	3.3	8	0	0		
2/week	10.8	26	5.8	14	13	30	11	27	4.6	11		
1/week	18.7	45	28.3	68	28	68	36	86	14.6	35		
Occasional	6.7	16	57.1	140	53	128	47	113	13.7	33		
Never	0	0	3.8	6	2.1	5	2.5	6	67.1	161		
Total	100	240	100	240	100	240	100	240	100	240		

Table 8: Frequency of Consumption of Millets

Table 6. Frequency of Consumption of Minets												
Grains	3/1	vk	2/wk		1/wk		Occasional		Never		Total	
	%	No	%	No	%	No.	%	No	%	No	%	No
Ragi	2.1	5	3	7	2.6	6	63.6	146	28.7	66	100	240
Sorghum	7.8	18	4.3	10	6.5	15	58.3	134	23.1	53	100	240
Bajra	0.9	2	.0.9	2	5.0.	12	76.1	183	17.1	41	100	240
Maize					14.6	35	73.7	177	11.6	28	100	240
Samalu					26.2	63	41.7	100	32.1	77	100	240
Varagulu					12.5	30	51.7	124	35.8	86	100	240
Korralu					5.0	12	73.7	177	21.3	51	100	240
Udhalu					28.3	68	30.8	74	40.9	98	100	240
Arekelu					35.8	86	48.4	116	15.8	38	100	240
Aundukorralu					17.1	41	61.7	148	21.2	51	100	240

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