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Assessment of KAP levels on RTU multigrain mixes usage through Nutrition education for management of dual burden of malnutrition

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Abstract
Indian cuisine rests heavily on the usage of flours. One of the staple food items in most Indian households is the chapathi. Wheat flour has enjoyed quite a lot of attention on the Indian plate. A multigrain flour mix combines various grains and pulses to create a tasteful mixture and is therefore high in complex carbohydrates, fiber, vitamins and minerals. A total of 64 women of 20-45 age groups were selected from three villages in Telangana state and assessed the Knowledge, Attitude and Practice levels of Ready To Use multigrain mixes before and after nutritional education with the help of structured questionnaire. Results showed that nutrition education enhanced knowledge, attitude and practice levels of subjects. The impact of nutrition education clearly indicated 1 per cent significant difference in knowledge levels and 5 per cent significant difference in attitude as well as practice levels of the subjects before and after nutrition education intervention. Nutrition education is the best method to motivate the people towards healthy lifestyles.

Keywords: Multigrain mix, knowledge attitude and practice levels, nutrition education, healthy lifestyle

Introduction
Nutrition is a core pillar of human development and proper planning and intervention not only can reduce the burden of under nutrition and obesity but also can advance the progress of nations. Nutritional problems are common throughout the country mainly due to lack of knowledge on nutrition. Some people lack adequate food while some people have adequate amount of food yet make its poor choices.

India is a developing country with a large segment of population depending upon wheat, rice and maize as staple food which provide calories and proteins. A study by Nigam *et al*., 2013 [4] and Malik *et al*., 2015 [5] stated that, traditionally only wheat has been used as a whole wheat meal (atta) in production of chapattis, paratha and pooris.

A multigrain flour mix combines various grains and pulses to create a tasteful mixture full of health benefits. As it contains many ingredients, it offers a change from the usual flours such as whole wheat, while increasing the nutritional value of the dish. Each grain has its own nutritional benefit. A multigrain mix brings together their best in one dish. Multi grain mix was high in complex carbohydrates and protein. Complex carbs are great for energy production. They break down slower thereby providing energy over a longer period of time. Protein component in multi grain mix aids the body in tissue repair and also in the production of antibodies that help to fight against diseases/infections.

Additionally, multigrain mixes contains nutrients, fiber, essential minerals like magnesium, copper and iron, along with essential fatty acids, vitamins, and starch that help in metabolism, building strong bones and enhancing overall health & well-being. Diets high in whole grains are linked to a reduced risk of health conditions such as excess weight and obesity, heart disease, type 2 diabetes and some cancers. Dietary fiber is also beneficial for bowel health by preventing constipation and feeding the “good” gut bacteria which is likely to result in a number of health benefits.

Since multigrain mixes are a mix of more than one grain, its nutritional value will naturally be more than that of the single grain flour. Similarly, multigrain mixes contains all the health benefits granted by the each flour present in it.

All wholegrain flours have higher concentrations of dietary fibers and bioactive compounds, which makes it ideal for our digestive systems. Due to the presence of a healthy amount of dietary fibers, whole grain multigrain mixes grants higher satiety levels, which eventually helps in weight loss and management.

The increase in obesity and chronic diseases such as diabetes and heart disease worldwide reflects the complex interactions of biology, personal behavior and environment. Consequently there has been a greater recognition of the importance of nutrition education (Contento, 2008) [1]. Nutrition education is a key element to promoting lifelong healthy eating (Rodrigo and Aranceta, 2001) [2]. Knowledge was significantly associated with healthy eating and including nutrition knowledge is a target for health education campaigns which aimed at promoting healthy eating (Wardle *et al*., 2000) [3].

Materials and Methods

Preparation of questionnaire

A schedule was developed regarding demographic profile, food consumption pattern, health condition, knowledge, attitude and practice of RTU multigrain mixes.

Selection of subjects: Three villages i.e., Dubbacharla and Ramachandraguda villages of Maheswaram mandal, Shamshabad district and Tholkatta village of Moinabad mandal, Ranga Reddy district, Telangana state were identified for conducting the study. People who are staying in the three villages were selected for the study and survey was conducted.

Selection of sample: After discussing with the subjects, a total of 64 women of 20-45 age groups were selected from three villages i.e., Dubbacharla (n=20), Ramachandraguda (n=20) and Tholkatta (n=24).

Pre-assessment of KAP levels of RTU multigrain mixes: A questionnaire was developed and standardized for collecting the information and it was used to assess KAP levels on RTU multigrain mixes. General information pertaining to the type of family, family size, educational status and occupation, food habits, meal pattern and KAP levels of RTU multigrain mixes were collected from the all 64 subjects.

Nutrition education to selected subjects: After completing pre-assessment of KAP levels of RTU multigrain mixes, nutrition education was given to the selected subjects for a period of 100 days. Education programme was given to the selected subjects using appropriate audio visual aids covering information about multi grain mixes and their health benefits and cooking practices.

Post-assessment of KAP levels of RTU multigrain mixes: After giving nutrition education to the selected subjects, post assessment was done to assess their KAP levels of RTU multigrain mixes.

Pre and post knowledge, attitude and practice levels of the subjects were taken with the help of questionnaire to assess the impact of nutrition education programme on improvement of the KAP of the subjects.

Schematic Representation of the Study

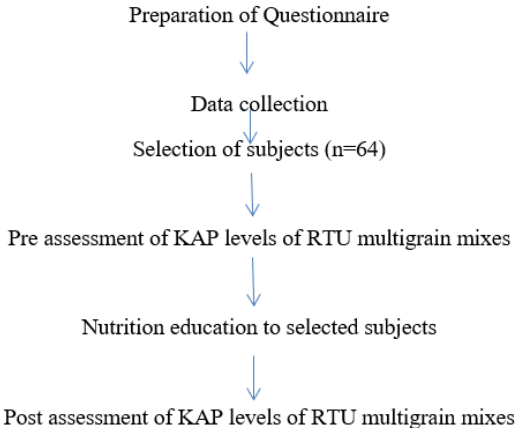

Fig 1: Schematic representation of the study

Results and Discussion

Information pertaining to demographic profile of the selected subjects was presented in Table 1

Table 1: Demographic Profile of selected subjects

Demographic profile	Total (N=64)
Gender	
Male	0 (0)
Female	64 (100)
Age	
20-25	8 (12.5)
26-30	14 (21.87)
31-35	22 (34.37)
36-40	12 (18.75)
41-45	8 (12.5)
Educational Qualification	
Primary School education	24 (37.5)
Secondary School education	20 (31.25)
Intermediate	18 (28.12)
BSc	2 (3.12)
Any other	0 (0)
Occupation	
Agriculture	35 (54.68)
Housewifes	29 (45.31)
Income per month	
<3907	29 (45.31)
3907-11707	35 (54.68)
Type of Family	
Joint	6 (9.37)
Nuclear	58 (90.62)
Religion	
Hindu	45 (70.31)
Muslim	14 (21.87)
Christian	5 (7.81)
Any other	0
Area of Residence	
Rural	64 (100)
Urban	0

Gender and Age: Out of 64 samples surveyed, cent per cent (64 no.) were females. 34.37 per cent (22 no.) age group ranged from 31-35 years, 21.87 per cent (14 no.) age group ranged from 26-30 years, 18.75 per cent (12 no.) age group ranged from 36-40 years and 12.5 per cent (8 no.) from 20-25 and 41-45 age groups.

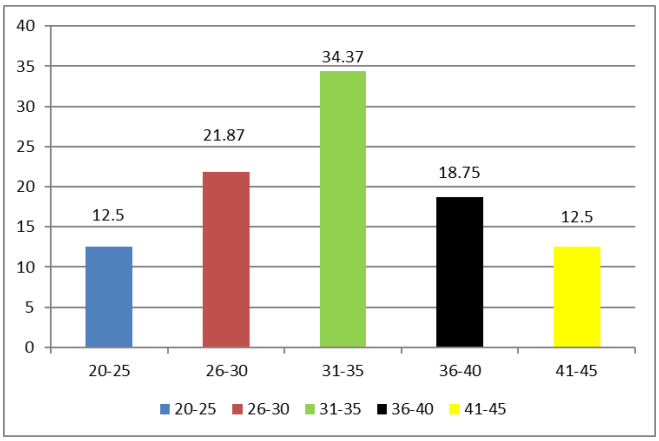

Fig 2: Age group of the selected subjects

Educational Qualification

Results showed that 37.5 per cent (24 no.) studied primary school, 31.25 per cent (20 no.) studied secondary school education, while 28.12 per cent (18 no.) did intermediate and 3.12 per cent (2 no.) did their graduation.

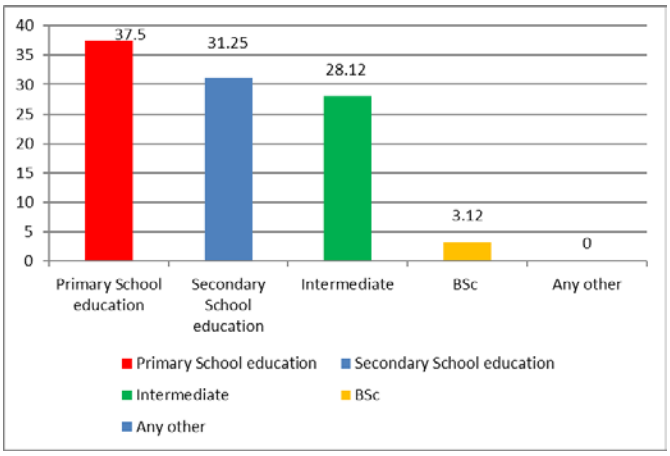

Fig 3: Educational qualification of the selected subjects

Occupation and Income

54.68 per cent (35 no.) were doing agriculture with the income of 3907-11707 per month and 45.31 per cent (29 no.) were housewifes with the income of <3907 per month.

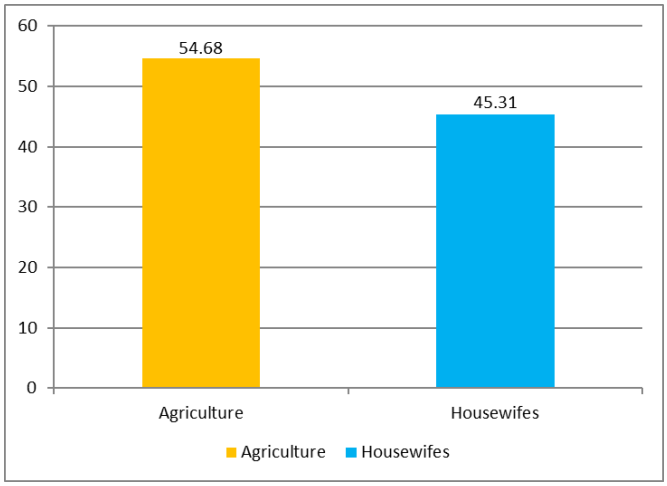

Fig 4: Occupation of the selected subjects

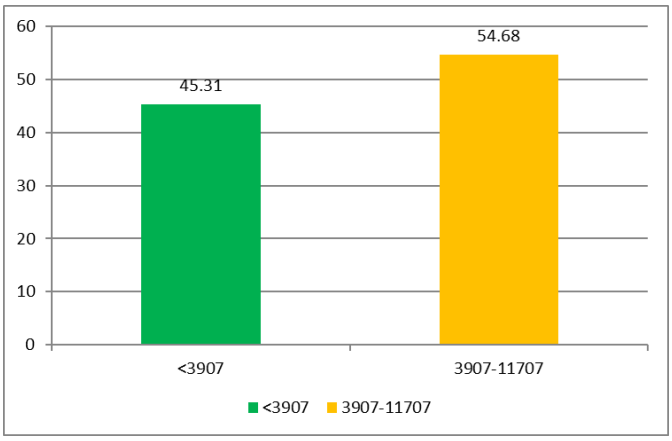

Fig 5: Income per month of the selected subjects

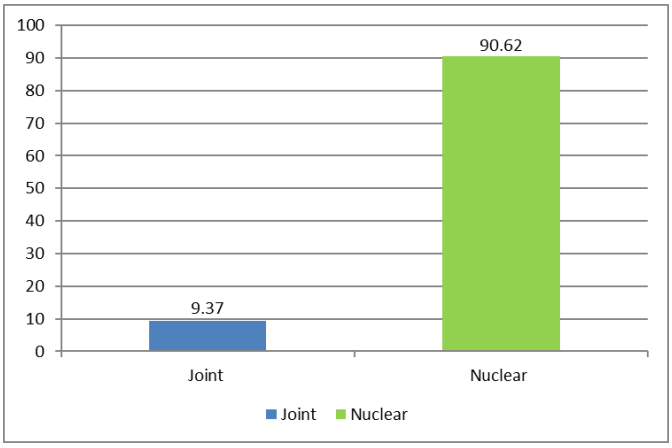

Fig 6: Type of family of the selected subjects

90.62 per cent (58 no.) were living in nuclear families and 9.37 per cent (6 no.) were living in joint families. 70.31 subjects (45 no.) were Hindus, 21.87 (14 no.) were Muslims and 7.81 per cent (5 no.) were Christians. Cent per cent (64 no.) subjects are living in rural areas.

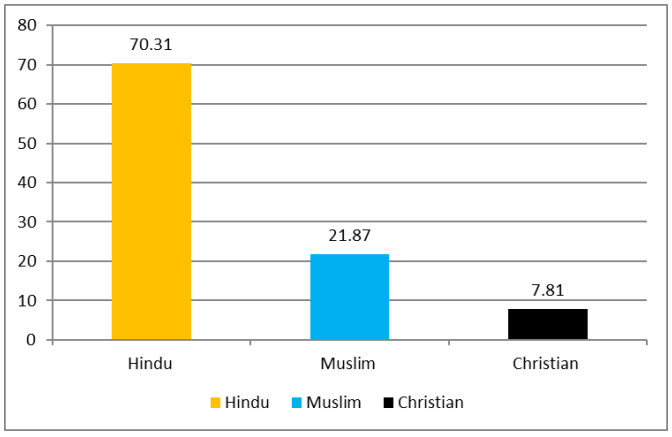

Fig 7: Religion of the selected subjects

Table 2: Knowledge levels of RTU multigrain mixes (N=64)

Knowledge Levels	Before Nutrition education	After Nutrition education
Poor	47 (74.12)	7 (11)
Average	15 (23.62)	42 (66.12)
Good	2 (2.5)	15 (22.87)

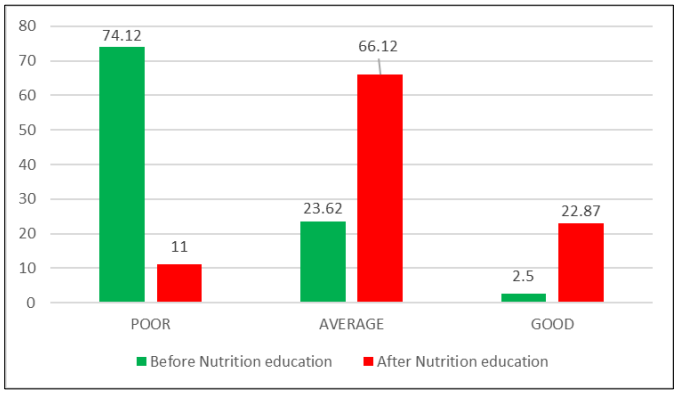

Fig 8: Knowledge levels of RTU multigrain mixes

64 samples were surveyed regarding KAP of multigrain mixes in Dubbacharla (n=20), Ramachandra guda (n=20) and Tholkatta (n=24) villages. Results showed that before nutritional education, 74.12 per cent (47 no.) subjects had poor knowledge levels regarding RTU multigrain mixes, 23.62 per cent (15 no.) had average knowledge levels and 2.5 per cent (2 no.) had good knowledge levels. After giving nutritional education for 3 months, 66.12 per cent (42 no.) subjects had average knowledge levels, 22.87 per cent (15 no.) subjects had good knowledge levels and 11 per cent (7 no.) subjects had poor knowledge levels. Results showed that there was an increase in knowledge levels of the subjects.

Table 3: Attitude levels of RTU multigrain mixes (N=64)

Attitude Of Rtu Mixes	Before Nutrition education	After Nutrition education
Always	8 (11.62)	8 (11.79)
Never	48 (75.51)	17 (27.07)
Sometimes	8 (12.84)	39 (61.1)

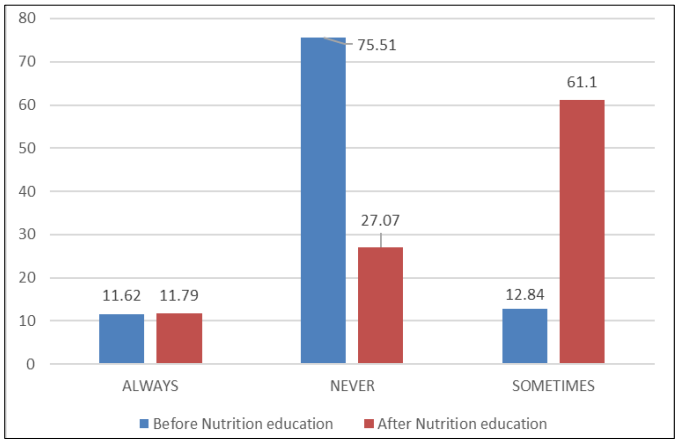

Fig 9: Attitude levels of RTU multigrain mixes

Results showed that before nutritional education, 75.51 per cent (48 no.) subjects had never prepared and used RTU multigrain mixes, 12.84 per cent (8 no.) had sometimes prepared and used RTU multigrain mixes, 11.62 per cent (8 no.) had always prepared and used RTU multigrain mixes. After giving nutritional education for 3 months, 61.1 per cent (39 no.) subjects had sometimes prepared and used RTU multigrain mixes, 27.07 per cent (17 no.) had never prepared and used RTU multigrain mixes, 11.79 per cent (8 no.) had always prepared and used RTU multigrain mixes. Results showed that there was increase in preparation and use of RTU multigrain mixes i.e., attitude level of subjects towards RTU multigrain mixes increased.

Table 4: Practice levels of RTU multigrain mixes (N=64)

Practice About Rtu	Before Nutrition education	After Nutrition education
Strongly Disagree	4 (6.75)	7 (10.37)
Disagree	13 (20.25)	13 (20.62)
Neutral	33 (52.25)	10 (16.25)
Agree	13 (20.12)	22 (34.25)
Strongly agree	1 (0.625)	12 (18.5)

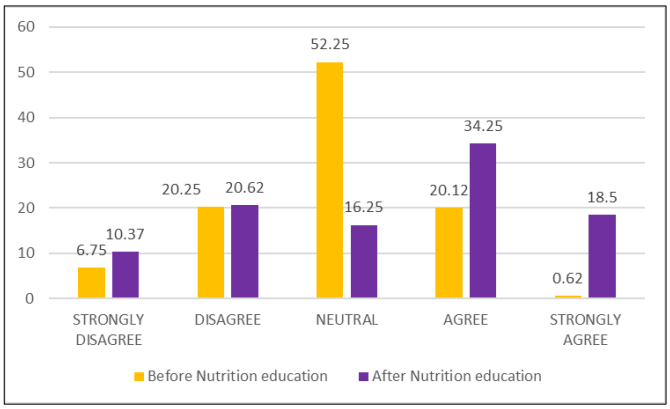

Fig 10: Practice levels of RTU multigrain mixes

Results showed that before nutrition education, 52.25 per cent (33 no.) subjects had neutral opinion about RTU multi grain mixes and their health benefits, 20.25 per cent (13 no.) subjects had disagreed opinion about RTU mixes health benefits, 20.12 per cent (13 no.) subjects had agreed about RTU mixes health benefits, 6.75 per cent (4 no.) subjects had strongly disagreed opinion about RTU mixes health benefits, 0.62 per cent (1 no.) subjects had strongly agreed opinion about RTU mixes health benefits. After giving nutrition education for 3 months, 34.25 per cent (22 no.) subjects agreed about RTU mixes health benefits, 20.62 per cent (13 no.) subjects had disagreed opinion about RTU mixes health benefits, 18.5 per cent (12 no.) subjects had strongly agreed opinion about RTU mixes health benefits, 16.25 per cent (10 no.) subjects had neutral opinion about RTU mixes health benefits and 10.37 per cent (7 no.) subjects had strongly disagreed opinion about RTU mixes health benefits. Results showed that there was an increased opinion about RTU multigrain mixes health benefits.

Table 5: Impact of nutrition education on KAP levels of RTU multigrain mixes

S.NO.	Levels	Before		After		t value	p value
		Mean	SD	Mean	SD		
1	Knowledge	81.28	22.19	135.60	9.43	13.6330	0.00**
2	Attitude	184.08	39.73	211.12	58.51	2.0844	0.04*
3	Practice	87.11	37.89	118.22	21.55	3.6472	0.00**

**5% level of significance *1% level of significance

The impact of nutrition education was assessed through mean difference of KAP scores and the details are represented in table 5. It clearly showed that 1% level of significant difference was found in knowledge and practice levels and 5% level of significant difference was found in attitude levels of the subjects before and after nutrition education intervention.

Conclusion

Nutrition education is an important measure to improve dietary habits and food choices, since poor dietary habits are the main reason for poor nutritional status of most of the people. Nutrition education helps to build the capacities for people to: feed themselves and their families will get the right foods at the right prices, prepare healthy foods and meals which they enjoy. The nutrition education program has positive impact and it can be concluded that nutrition education was significantly effective for changing the subject's knowledge, attitude and practice towards RTU mixes. Nutrition education is the best method to motivate the people towards healthy lifestyles.

Acknowledgment

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