



Development of Nutrition Smart Community and Economic Empowerment of CIGs: Experience of KVK, Raichur, Karnataka

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ABSTRACT: An effort was made by Krishi Vigyan Kendra Raichur to address community nutritional security through fresh vegetable juices for health management. KVK Raichur provided technical knowhow as to how to prepare fresh vegetable juices from carrot, bottlegourd, cucumber, bitter gourd, beetroot and Amla. Two interested CIGs came forward to prepare. These two CIGs prepared and sold fresh vegetable juices every day between 5:30 AM to 7:30 AM at UAS campus gate for three months. People coming for morning walk consumed the juices and regular consumers were specially, those people suffering from various health problems such as diabetes, hypertension, gastritis, in the campus. Results of the study revealed that there was a significant positive impact on health as per feedback of the consumers. Eighty percent of the consumers opined that their health problems have been reduced considerably. It was observed there was a significant decrease in their health problems among hypertension, Type II diabetes persons. There was a significant positive impact on their health as perceived by the consumers, their overall health improved, helped to normalize blood pressure, helped to reduce blood sugar level, gave a feeling of happiness and self-care, reduced joint pain, reduced general weakness, increased appetite, improved sleep, helped in easy bowel movement and reduced gastritis problems. In addition to the economic gain of CIGs, their confidence level boosted because of the positive impact, which is a motivational initiative to other unemployed youth in rural India, which will address both economic and nutritional issues of the common man.

Keywords: Nutritional security, health management, vegetable juices, CIGs

INTRODUCTION

Nutrition security is a prime concern of our country today, as the number of people suffering from lifestyle related diseases and specific nutrient deficiencies are on the steep rise. Now a days, people are health conscious and quality conscious. Health costs on wealth so also associated on various social impacts. Nutritional consequences with substantial economic relations have been well documented, which were also associated to poor learning outcome and productivity (Spears, 2012). Studies exceptionally demand on nutritional security issues than focusing on caloric intake as public interests in food decisions (Kochar, 2005). Desai and Vanneman (2015) have examined the potential impact of public distribution system and integrated child development schemes on the nutritional security with special relevance to children with a suggestion to find alternative

than supporting for just a cereal distribution. Food and nutritional security trends suggest that India has not only achieved self-reliance in food grains production but often it is faced with the challenge of management of huge food grain surplus that accumulates as public buffer stocks (Anjani Kumar *et al.*, 2012). These studies indicate the importance of nutritional security.

Vegetables are the rich sources of vitamins and minerals which aid in many physiological functions in the body and play a major role in maintaining good health. Bitter gourd (*Momordica charantia*) contains polypeptide-P, one of the plant insulin known to lower blood sugar level. Bottle gourd is traditionally used for treating many urinary problems, Cucumber is known for its rehydrating effect helps in weight reduction. Carrot and beet root are very rich sources of β carotene, which is a precursor of vitamin A. All these vegetables prevent cell damage by

free radicals, Improve eye sight ,boost immunity, prevent cancer, good for heart health, good for glowing skin, good to manage blood pressure, detoxify naturally. They boost energy & stamina, good for digestion. They are good sources of dietary fibre and help in relieving constipation.

Another important concern of our country is gainful employment for the rural youth. To address the issues of nutritional security of people as well as gainful employment opportunities a study was undertaken by KVK Raichur with the following specific objectives viz., to study the impact on health management of the consumers and to know the extent of economic empowerment of the commodity interest groups (CIGs).

MATERIAL AND METHODS

Two commodity interest groups were given training and technical know how about vegetable juice extraction. They were trained in hygienic handling of utensils, method of preparation and extracting juices from various vegetables. So that fine pulp part remains in the juice. Demonstration was given to extract juice, so as to retain maximum nutrients in the extract. The nutrient content in the vegetables is given in Table 1.

CIGs were instructed to:

- Maintain hygiene at all steps right from purchasing quality vegetables to serving.
- Use black salt i.e. *kala namakh* (Potassium salt) instead of common salt (NaCl)
- Use RO water of assured quality
- Use steel containers to carry juices as they are easy to clean
- To avoid plastic disposable cups & use environment friendly paper cups
- To discard left over juices

They were provided with KVK banner, uniforms, head gear and hand gloves. They sold these juices for the people who come for a morning walk in the campus

everyday between 5.30 am to 7.30 am for duration of three months.

RESULTS AND DISCUSSION

Majority of the consumers preferred mixture of all juices with honey. This could be due to the perceived health benefits of all the vegetable juices as well as honey. Least preference was given to cucumber juice with honey. This could be due to the attractive health benefits obtained by bitter gourd and carrot. These preferences may be due to their health needs and taste (Table 2). These preferences help CIGs to prepare the required quantity of different juices. The parameters studied are in agreement with Spears (2012).

As depicted in Table 3 vegetables having high moisture content such as cucumber and bottle gourd, cannot be diluted more than 1:1 dilution ratio, as they lost flavour and taste. Whereas, carrot and bitter gourd can be diluted in 1:2 ratio, and beet root gives highest quantity of juice, which can be diluted in 1:3 ratio without hampering flavour and taste. This is in line with literature published by Anjani Kumar *et al.* (2012).

Many of the consumers 8 (21.05 %) were drinking juices for the reason that it gave them a feeling of happiness and self-care. Followed by the reason that these juices improved appetite 7 (18.42). Other reasons were to normalise blood pressure, to reduce blood sugar level, to reduce joint pain, to combat anaemia, to reduce general weakness, to help in reducing constipation and gastritis problems. One consumer has opined that he did not feel tired or any change in the body even when a tablet for diabetes is missed for one day (Table 4a).

When overall rating was analysed, majority (81.57 %) of the consumers have opined that their overall health improved considerably. Five (13.16 %) persons opined that there was a little improvement, and two (5.26%) of them indicated that they could not observe any change (Table 4b). The said health benefits are in agreement with Spears (2012).

Table 1: Nutritive value of vegetables in 100 g edible portion.

Vegetables	Moisture (g.)	protein (g.)	Fat (g.)	Mineral (g.)	Fibre (g.)	Carbo hydrate (g.)	Energy (k.cal)	β carotene (μ g.)	Thiamine (mg.)	Niacin (mg.)	Vitamin C (mg.)
	4	5	6	7	8	9	10	14	15	16	17
Bitter gourd (<i>Momordica charantia</i>)	92.4	1.6	0.2	0.8	0.8	4.2	25	126	0.07	0.09	0.5
Bottle gourd (<i>Logenaria vulgaris</i>)	96.1	0.2	0.1	0.5	0.6	2.5	12	0	0.03	0.01	0.2
Carrot (<i>Daucus carota</i>)	86.0	0.9	0.2	1.1	1.2	10.6	48	1890	0.04	0.02	0.6
Cucumber (<i>Cucumis sativus</i>)	96.3	0.4	0.1	0.3	0.4	2.5	13	0	0.03	0	0.2
Beetroot (<i>Beta vulgaris</i>)	87.7	1.7	0.1	0.8	0.9	8.8	43	0	0.04	0.09	0.4

(Source: Gopalan *et al.*, 1989)

Table 2: Rank assigned as per consumer preference of juices and combinations.

Sr. No.	Vegetable juice	With Honey	With potassium Salt	Plain Juice
1.	Mixture of all juices	I	IX	VI
2.	Bitter gourd (<i>Momordica charantia</i>)	II	IV	XVI
3.	Carrot (<i>Daucus carota</i>)	III	XVII	VII
4.	Cucumber (<i>Cucumis sativus</i>)	XVIII	V	VIII
5.	Beetroot (<i>Beta vulgaris</i>)	X	XV	XIII
6.	Bottle gourd (<i>Logenaria vulgaris</i>)	XII	XI	XIV

Table 3: Quantity of juices extracted from various vegetables.

Sr. No.	Vegetables	concentrated juice (l / kg)	Dilution ratio	Total quantity produced (l / kg)
1.	Bitter gourd	1.58	1 : 2	4.74
2.	Carrot	1.18	1 : 2	3.54
3.	Cucumber	0.80	1 : 1	1.16
4.	Bottle guard	0.92	1 : 1	1.84
5.	Beet root	1.42	1 : 3	5.68

Table 4 a: Reasons for drinking vegetable juices and health benefits as perceived by the consumers.

Sr. No.	Perceived health benefits	Frequency (n=38)	Percentage
1.	To normalise blood pressure	2	5.26
2.	To reduce blood sugar level	3	7.89
3.	Gives a feeling of happiness and self-care	8	21.05
4.	To reduce joint pain	2	5.26
5.	To reduce general weakness	4	10.52
6.	Increases appetite	7	18.42
7.	Improves sleep	2	5.26
8.	Helped in reducing constipation and gastritis problems	4	10.52
9.	Weight and fat reduction	2	5.26
10.	To combat anaemia	1	2.63
11.	Doctor has advised to consume more of vegetables and fruits	1	2.63
12.	To satisfy thirst after rigorous exercise	1	2.63
13.	Even if a tablet is skipped for one day no problem to manage diabetes	1	2.63

Table 4 b: Overall rating of perceived health benefits.

Sr. No.	Perceived health benefits	Frequency (n=38)	Percentage
1.	Overall health improved considerably	31	81.57
2.	Little bit improvement in health	05	13.16
3.	No change in health	02	05.26

Table 5: Economics: Fresh vegetable juices - sold everyday between 5.30 to 7.30 am

Vegetables	Cost/kg (30 days average rate)	Gross production cost (Rs. / month)	Gross returns (Rs. / month.)	Net returns (Rs. /month)	B:C ratio
Carrot	30.28	2,112	8,460	6,348	3 : 1
Bitter gourd	35.46				
Cucumber	38.68				
Beet root	31.17				
Bottle gourd	41.56				

There was a fair amount of money generated by selling different juices. For each rupee spent net profit was 3 times. This indicates that business of health drinks can be viable and capable of generating a fair amount of money. It also indicates that this can be taken up as a means of gainful employment for the unemployed youth (Table 5). Similar results were also reported by Desai and Vanneman (2015).

CONCLUSION

It can be concluded that health drinks such as fresh vegetable juices provide nutritional security to the consumers. This business can be a good income generating activity in addition to development of a nutrition smart community. This business can be taken up by the other unemployed youth in the other parts of the country. In future a longitudinal study can be taken up to study perceived and actual health benefits.

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Conflict of Interest. None.

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