

Inculcating nutrition knowledge through education intervention

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ABSTRACT

Nutrition education is a method where the messages related to nutrition is transmitted to bring about a desirable change in the target group school students are vulnerable to learning and are more receptive to changes. Hence, the study was conducted to know the impact of education intervention on nutrition. Seventy five early adolescent rural boys and girls of high school of Dharwad district of Karnataka were purposively selected for the study. The lessons were prepared and delivered on nutrition on selected five topics including food, balanced diet, water and dietary fibre, healthy cooking methods and minor millets. The results revealed that chapter wise knowledge gain of respondents before and after education intervention was maximum in water and dietary fibre (26.67%) followed by minor millets (22.67%), healthy cooking methods (21.34%), food (20.00%) and balanced diet (17.33%). The overall values of both the classes depicted 97.33 per cent of respondents in high knowledge level and 1.33 per cent in medium and low each after the education intervention. The change in the mean scores before and after the education intervention proved the considerable impact of education intervention. A significant relationship of knowledge of students and standards (8 and 9) was reported. Moreover, the pre-test score was found to be significantly related to the post test scores. Acquiring nutrition knowledge and putting it into practice from early adolescent age can help to uplift the nutritional status of the students to a considerable extent. The positive impact of education intervention denotes the effectiveness of such education intervention programmes and suggests implication of more such programmes in the rural areas.

INTRODUCTION

Nutrition education is a method where the messages related to nutrition is transmitted to bring about a desirable change in the target group. The change may be focused to improvement in knowledge, attitude or practice of behaviour. The method can be adapted to the need of the target and the lesson can be provided by formal or informal means depending on the choice of subject and the participants of the educational programme. The incidences of the nutritional problems do take their toll in the rural areas. Moreover, nutritional security is the call of the hour and generating awareness about the same

requires the knowledge of basic nutritional aspects. School students are vulnerable to learning and are more receptive to changes. Gopalan (2013) concluded that India has continuing high levels of poverty and illiteracy, and has a huge demographic potential in the form of a young population. This advantage must be leveraged by investing in nutrition education, household access to nutritious diets, sanitary environment and a health-promoting lifestyle. This requires co-operation from all the stakeholders, including governments, non-government organizations, scientists and the people at large. So, it is important to provide nutrition education to the students also so that a better understanding can be developed

among them for improved intake of nutrients in the limited available resources. It has been reported by Cummings *et al.* (2012) that even small treatment sizes can have important educational effects. They found that the changing behaviour through intervention had an impact on educational attainment in a positive way. Yousuf *et al.* (2013) studied the effectiveness of nutrition education vs. non-nutrition education intervention in improving awareness pertaining iron deficiency among anemic adolescents and found that multimedia nutrition education programme conducted at school setting was in fact practical and effective in improving awareness on iron deficiency among anemic adolescents. They further suggested health authority to incorporate nutrition education intervention along with the supplementation programme since both play important role, particularly in correcting iron status and preventing reoccurrence of iron deficiency among the adolescents.

Therefore, an effort was made to assess the impact of nutrition education intervention on school students with the following objectives:

- To study the profile of the selected students and their parents.
- To develop the educational referrals and the audio-visual aids on selected topic.
- To assess the knowledge gain of the students on selected topics.

MATERIAL AND METHODS

A baseline survey was conducted to know the total number of English medium schools in Dharwad taluk. The information was obtained from the Block Education Office and finally with due permission of the authority of an English medium school – “Alnavar Education Society’s Smt. Annapoorna Chandrashekharyya Hiremath English Medium School” established in Alnavar village was selected. The study was carried out on purposively selected 8th and 9th standard students including both boys and girls during the year 2013-14. The total number of students on roll was eighty in the selected standards. Based on the regularity of the students attending the school seventy five students were selected for the study.

A general information like age, education, ordinal position, type of family, size of family, education of parents, occupation of parents and mass media participation of parents to assess the socio-personal profile of the students was collected with the help of pre-structured schedule by interviewing each student. To know the impact of education intervention, a schedule including questions on nutrition was prepared and pre-tested in a non-study area to locate any ambiguity in the questions. After pre-testing certain modifications were made in the schedule by consulting the specialists in the selected topics and related literatures. Finalized schedule was used for

data collection. Before and after type of experimental design was adopted for assessing the impact of the intervention.

The pre-test was conducted to assess the potential knowledge of the students regarding nutrition. The lessons were prepared and delivered on selected topics including food, balanced diet, water and dietary fibre, healthy cooking methods and minor millets. Each of the five lessons was delivered for forty minutes with the use of power point presentation and flash cards. Post test was conducted immediately after lecture was delivered. Subsequently hand outs were provided to each student for further reference.

The selected variables on socio-personal characteristics were analyzed using frequencies and percentages. The gain in knowledge was assessed by knowledge index. The scores of both pre-test and post- test was compared with the paired t test.

OBSERVATIONS AND ANALYSIS

The details of the booklet developed for the education intervention is presented in Table 1. The selected syllabus for nutrition was covered in five chapters of food, balanced diet, water and dietary fibre, healthy cooking methods and minor millets. At the end of each chapter, sample questions in the form of multiple choice questions and true/ false type were provided.

Table 2 depicts the socio-personal characteristics of the selected respondents. It can be concluded that 86.67 per cent of respondents were of the age between 13 to 14 years followed by 9.33 per cent of respondents in the age group of 15-16 years and the remaining 4 per cent were in the age group of 11-12 years. With regard to gender, a total of 42.67 per cent of the sample were girls, where 25.33 per cent girls were from Std. 8 and 17.34 per cent were girls of Std. 9. Among boys, 29.33 per cent were from std. 8 and 28 per cent boys belonged to Std. 9 making 57.33 per cent of total sample. More number of students belonged to a medium family size (56.00%), followed by small family (42.67%) and large family (1.33). Among family type, majority of the students were from nuclear family (88.00%) followed by joint family (8.00%) and extended family (4.00%).

Regarding ordinal position it can be elucidated from Table 2 that 42.67 per cent of students were first born in their family which was followed by 34.66 per cent of last born children and remaining 22.67 per cent children were middle born. A close observation of the academic grades of the students revealed that 32.00 per cent students between the grades of 80-90 per cent followed by 22.67 per cent students in the grade level of 90-100 per cent which was further closely followed by 21.33 per cent students in the grade of 70-80 per cent. The remaining students were found to be in the grades of 60-70 per cent and 50 -60 per cent with 17.33 per cent and 6.67 per cent of students, respectively. From the observation of the awards received by

Table 1 : Course outline of nutrition syllabus	
Topic	Chapters
Food	Introduction
	Functions of food
	Nutrients
	Types of nutrients
	Functions of nutrients
	5 Food group classification of food
	Sample questions: Multiple choice and True /False type
Balanced diet	Introduction
	Characteristics of balanced diet
	Food guide pyramid
	Recommended dietary allowances
	RDA for school children.
	Sample questions: Multiple choice and True /False type
Water and dietary fibre	Introduction
	Sources of water
	Functions of water
	Effects of inadequate water consumption
	Fibre
	Classification of fibre
	Functions of fibre
	Sources of fibre
	Sample questions: Multiple choice and True /False type
Healthy cooking methods	Introduction
	Pre-preparation tips for healthy cooking
	Methods of cooking
	Tips for better cooking
	Other tips to follow for healthy living
	Sample questions: Multiple choice and True /False type
Minor millets	Introduction
	Common types of minor millets
	Importance of minor millets
	Nutritional facts of minor millets
	Therapeutic importance of minor millets
	Sample questions: Multiple choice and True /False type

the students, it was found that majority of the students received awards at school level (40.00%), followed by 22.67 per cent at taluk level, 6.66 per cent at district level and 4.00 per cent at national level. Only 6.67 per cent of students receive financial assistance from school.

The demographic characteristics of parents of the respondents were studied with regard to their age, education, occupation and mass media exposure. The results are presented in Table 3. It was found that almost equal percentage of father of respondents belonged to the categories of below and above of 44 years, while in case of mother of respondents, 52.00 per cent of mothers belonged to the age group of 39 years and above and remaining 48.00 per cent of mothers belonged to the age group of below 39 years.

It was revealed that majority of the fathers (56.00 %) had received education up to college and above followed by High School (28.00%), Middle School (6.67 %) and illiterate (9.33%). None of the fathers was up to Primary school education level (Table 3).

The data regarding education of mother of the respondents showed that more than fifty per cent (56.00%) of the mothers were in the category up to High School education followed by 21.33 per cent college level and above, 12.00 per cent illiterate, 8.00 per cent Middle School and 2.67 per cent up to Primary School level of education. More number of fathers had salaried job (44.00%) as analyzed through the data. Another 37.33 per cent fathers had subsidiary occupation followed by 17.34 per cent in agriculture and only 1.33 per cent working as agricultural labour.

An analytical study of the data regarding mother's occupation showed that 88.00 per cent of them were housewives followed by 8.00 per cent subsidiary job, 2.67 per cent in salaried job, 1.33 per cent practicing agriculture and none of them working as agricultural labour.

Mass media exposure of parents as found out by Table 3 indicated medium exposure of the majority of respondents (81.33 %). An equal number of parents were found to be in low and high level of mass media exposure (9.33%) each.

Chapter wise knowledge gain of respondents before and after education intervention is depicted in Table 4. Among the five chapters, water and dietary fibre showed the maximum increase of 26.67 per cent followed by minor millets (22.67%), healthy cooking methods (21.34%), food (20.00%) and balanced diet (17.33%).

The maximum increase in knowledge about water and dietary fibre might be accorded to the students' previous exposure to the same topic in lower standards of the school curriculum. Healthy cooking methods and minor millets also had a significant increase in the post knowledge of the students. The possible reason might be the interest of the students which may have over powered them to pay more attention to these lessons. There are many studies that showed a considerable

increase in knowledge of nutrition due to the education intervention. Bakshi and Singh (2012) showed the improvement in knowledge of adolescents regarding consumption of fruits and vegetables. Similar positive outcomes have been reported by Falter *et al.* (2011) and Srivastava *et al.* (2007).

Table 5 illustrates the class wise categorization based on knowledge level of respondents before and after education intervention about nutrition. Overall values of both the classes regarding nutrition exhibited almost equal distribution of students in all the categories in general, specifically 30.67 per cent in low, 29.33 per cent in medium and 40.00 per cent in high knowledge level before education intervention. Looking to the classes, majority of the respondents were in low knowledge level (43.90 %) in Std. 8, followed by medium (34.15 %) and high (21.95 %). In Std. 9 the students were found to be in high

(61.76 %), followed by medium (23.53 %) and low (14.71%).

After education intervention, the overall values of both the classes depicted 97.33 per cent of respondents in high knowledge level and 1.33 per cent in medium and low each. A glance at class wise distribution showed that 97.56 per cent students in Std. 8 were in high knowledge level after the intervention, only 2.44 per cent students in low knowledge level and none of the students in medium category. In case of Std. 9, majority of the students were found to be in high knowledge level (97.06%) and remaining in medium category (2.94%) with no students in low knowledge level. This increase in knowledge may be due to the exposure of the students to the nutrition related lessons in the form of lecture and educational materials. The nutritional messages were reinforced with the help of relevant pictures and photographs

Sr. No.	Demographic characteristics	Categories	F	%	
1.	Age	11-12	03	4.00	
		13-14	65	86.67	
		15-16	07	9.33	
2.	Gender	Girls	Std. 8	19	25.33
			Std. 9	13	17.34
		Boys	Std. 8	22	29.33
			Std. 9	21	28.00
3.	Family size	Small (1-4 members)	32	42.67	
		Medium (5-7 members)	42	56.00	
		Large (more than 7)	01	1.33	
4.	Family type	Nuclear	66	88.00	
		Joint	06	8.00	
		Extended	03	4.00	
5.	Ordinal position	First born	32	42.67	
		Middle born	17	22.67	
		Last born	26	34.66	
6.	Academic grade	50%-60%	05	6.67	
		60%-70%	13	17.33	
		70%-80%	16	21.33	
		80%-90%	24	32.00	
		90%-100%	17	22.67	
7.	Awards	School level	30	40.00	
		Taluk level	17	22.67	
		District level	05	6.66	
		National level	03	4.00	
		None	20	26.67	
8.	Financial assistance	Yes	05	6.67	
		No	70	93.33	

Sr. No.	Demographic characteristics	Categories	F	%
1.	Age of father	44 and above	37	49.33
		Below 44	38	50.67
2.	Age of mother	39 and above	39	52.00
		Below 39	36	48.00
3.	Education of father	Illiterate	07	9.33
		Primary School (1-4 years)	00	0.00
		Middle School (5-7 years)	05	6.67
		High School (8-10 years)	21	28.00
4.	Education of mother	College and above	42	56.00
		Illiterate	09	12.00
		Primary School (1-4 years)	02	2.67
		Middle School (5-7 years)	06	8.00
5.	Occupation of father	High School (8-10 years)	42	56.00
		College and above	16	21.33
		Agriculture	13	17.34
		Agricultural labour	01	1.33
6.	Occupation of mother	Subsidiary	28	37.33
		Salaried job	33	44.00
		Agriculture	01	1.33
		Agricultural labour	00	0.00
7.	Mass media exposure of parents	Subsidiary	06	8.00
		Salaried job	02	2.67
		Housewife	66	88.00
		High	07	9.33
		Medium	61	81.33
		Low	07	9.33

Sr. No.	Chapters	Education intervention					
		Correct answer		Correct answer		Correct answer	
		Before		After		Gain	
		F	%	F	%	F	%
1.	Food	25	33.33	40	53.33	15	20.00
2.	Balanced diet	33	44.00	46	61.33	13	17.33
3.	Water and dietary fibre	39	52.00	59	78.67	20	26.67
4.	Healthy cooking methods	31	41.33	47	62.67	16	21.34
5.	Minor millets	33	44.00	50	66.67	17	22.67

Class	No. of students	Knowledge level					
		Before education intervention			After education intervention		
		Low (less than 70)	Medium (between 70-75)	High (more than 75)	Low (less than 70)	Medium (between 70-75)	High (more than 75)
Std. 8	41	18 (43.90)	14 (34.15)	9 (21.95)	1 (2.44)	–	40 (97.56)
Std. 9	34	5 (14.71)	8 (23.53)	21 (61.76)	–	1 (2.94)	33 (97.06)
Overall	75	23 (30.67)	22 (29.33)	30 (40.00)	1 (1.33)	1 (1.33)	73 (97.33)

which further increased their reception of knowledge. Hence, the present study revealed that there was a significant improvement in the knowledge of students regarding nutrition (Table 4). Sajjan *et al.* (2011), proved nutrition education to be one of the relevant, effective and sustainable strategies to combat anaemia. Wallen and Davis (2010) concluded that the effectiveness of teaching nutrition education in various settings can positively reinforce and support health messages.

Table 6 represents the impact of education intervention, regarding nutrition. Before the intervention, the mean score was found to be least in the chapter I-food (14.01), succeeded by chapter V- minor millets (14.37), balanced diet (14.59), healthy cooking methods (14.79) and water and dietary fibre (15.21). After the intervention, the mean scores increased to 15.63 in food, 16.53 in balanced diet, 16.76 in healthy cooking methods and 17.28 each in minor millets and water and dietary fibre. The change in the mean score was found to be significant at 0.01 level.

Table 7 indicates the relationship between the independent

and dependant variables. The independent variables selected were gender, class, awards received by the students, academic performance, family type, financial assistance and ordinal position. The parental characteristics like age, education, occupation and mass media exposure were also studied. The dependant variable was knowledge of the students.

Amongst all the variables, only standards (8 and 9) exhibited significant relationship with the knowledge of the students about nutrition. The reason might be the increased knowledge due to increased exposure to the topic. Pre-test score was found to be significantly related to the post test score at 1 per cent level. The pre-test score was also related to the post test score at 1 per cent level indicating the gain in knowledge of the students based on their previous knowledge. Similar work on the related topic was also done by Aurora (2001) on motherhood nutrition McGregor (1984); Nair and Radhakrishnan (2004) on childhood nutrition; Sharma and Sheeba *et al.* (2003) on comparative studies related to home environments of children in deprived urban settlements and high socio-economic status reveal that children in deprived settings

Sr. No.	Chapters	Pre-test		Post-test		t-value
		Mean	S.D.	Mean	S.D.	
I.	Food	14.01	1.27	15.63	1.49	9.69**
II.	Balanced diet	14.59	1.46	16.53	1.50	10.11**
III.	Water and dietary fibre	15.21	1.45	17.28	1.29	11.72**
IV.	Healthy cooking methods	14.79	1.26	16.76	1.48	12.01**
V.	Minor millets	14.37	2.49	17.28	1.73	9.21**

** indicate significance of value at P=0.01

Sr. No.	Variables	'r' value	
		Knowledge in pre-test	Knowledge in post-test
1.	Gender	0.063	-0.070
2.	Standards (8 and 9)	0.230*	0.198
3.	Awards	-0.016	-0.055
4.	Academic performance	-0.101	-0.131
5.	Family type	-0.008	0.089
6.	Financial assistance	-0.068	-0.095
7.	Ordinal position	0.010	-0.121
8.	Age of father	-0.121	-0.034
9.	Age of mother	-0.206	-0.194
10.	Education of father	0.092	0.000
11.	Education of mother	-0.059	-0.093
12.	Occupation of father	-0.013	0.102
13.	Occupation of mother	0.033	-0.054
14.	Mass media exposure of parents	-0.182	-0.059
15.	Knowledge in pre-test	1	0.407**

* and ** indicate significance of values at P0.05 and 0.01, respectively

had poor home environment which contributed to the difference in their development status.

Conclusion :

Acquiring nutrition knowledge and putting it into practice from early adolescent age can help to uplift the nutritional status of the students to a considerable extent. The positive impact of education intervention denotes the effectiveness of such education intervention programmes and suggests implication of more such programmes in the rural areas.

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