

# Development of nutrition education material to impart nutritional awareness among tribal adolescent girls of Ranchi district

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■ **ABSTRACT :** The study was performed as per the following objectives to assess the nutritional awareness related to dietary practices, to develop a film strip for nutrition education of selected tribal adolescent girls and to determine the gain in nutritional knowledge of selected adolescent girls through the developed film strip. For the present study adolescent girls of (13-16 years) were selected and divided into two groups, group A consisting of (13-14 years) age and group B consisting (15-16 years) age from 'Doman Dih' village of 'Rahe' block, 'Ranchi' district, state Jharkhand (N=60). The film strip entitled "LADKIYON MAIN POSHAN" was developed for providing the nutritional information and knowledge to the adolescent girls regarding the importance of iron, vitamin A, iodine and their role in our body. In the present study, the nutritional status of adolescent girls and the impact of communication methods on their knowledge, attitude and practices (KAP) were studied as pre-exposure data and post-exposure data. There was the positive impact of the film strip shown, as all the results showed significant  $p \leq 0.5$  which means the nutrition education imparted was fruitfully conducted and knowledge was gained in a better way. About 21.7 per cent of the respondents knew about balanced diet and after imparting nutrition education it raised to 66.7 per cent, 58.3 per cent of the respondents knew about the sources of calcium and after the film strip which was shown, it rose to 86.6 per cent, 66.7 per cent of the respondents knew about the deficiency of anaemia and after providing nutrition education, it rose to 78.3 per cent. 38.3 of the respondents knew about vitamin A but after providing nutrition education, it rose to 56.7 per cent. Knowledge level scores of the respondents was also increased after providing nutrition education, 3.3 per cent of the respondents scored very good and after providing nutrition education, it raised to 51.7 per cent. About 11.7 per cent of the respondents scored good and after providing nutrition education, it rose to 26.6 per cent which showed a positive impact of the adolescent girls towards knowledge.

■ **KEY WORDS:** Nutrition education, Adolescent girls, Film strip

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**W**orld Health Organization (WHO) has defined 'adolescence' as the period between 10 and 19 years. During period of puberty, the body has increased need for calories, and nutrients like protein, calcium, iron, folate, zinc, vitamin B complex and vitamin C are important nutrients during adolescence (Swarnalata and Yegammai, 2006). When adolescent girls come under the vulnerable group, the nutrients requirements increase which affect the growth and development of the individual and may affect the health

in the later part of their life. Anemia being the major problem of adolescent girls is defined as the condition in which there is either less than the normal number of (<4.2 million/ $\mu$ l) red blood cells or less than the normal quantity of (<12g/ml) haemoglobin in the blood. Information Education and Communication (ICE) activities are crucial for mobilizing people's participation in the development process. Nutrition education has been defined as educational measures for indicating desirable behavioural changes for the ultimate

improvement in the nutritional status of all nutrition intervention programmes (Deshpandey *et al.*, 2003).

## ■ RESEARCH METHODS

The following methodology was adopted for the study.

### Stage I :

*Selection of village :*

Doman Dih village of Rahe Block in Ranchi district was purposively selected for the present study.

### Stage II :

*Selection of respondents :*

A total number of 60 girls were selected randomly between 13-16 yrs. of age from 'Doman Dih village' of 'Rahe block' which comes under Ranchi district of Jharkhand state.

### Stage III :

*Development of film strip :*

The film strip was developed by using Adobe Premiere pro software. The raw material which was collected from books, magazines, lively pictures and some pictures from internet was taken. The film strip was shown on a wide screen of a projector.

The film strip was developed under the following prepared script with the help of digital camera. The film strip was developed under the following headings which showed their lifestyle and food habits.

### Stage IV :

*Collection of data :*

The data were collected in the form of developed questionnaire as pre-exposure data and post-exposure data. Similar types of questions were asked in the pre-exposure data and post-exposure data.

### Stage V :

*KAP assessment :*

Post exposure data were collected with the help of survey schedule and knowledge test performa. The method as

suggested by Kumar *et al.* (2005) was used with slight modifications for testing the knowledge of the subjects regarding anemia and micronutrients deficiency. Performa based on nutritional knowledge and health and hygiene was developed to assess the knowledge, attitude and practices of the selected adolescent girls and according to which scoring of data was done as scores gain of grades , >85-excellent, 71-85 - very good, 56-70 - good, 40-55 - fair, <40 - poor.

### Stage VI :

The data collected were tabulated and analyzed with the help of statistical technique such as F - test, frequency, percentage and mean score.

## ■ RESEARCH FINDINGS AND DISCUSSION

Table 1 shows the knowledge level of the respondents on balanced diet. It was observed that average of all respondents together only (21.7 %) answered correctly as balanced diet includes all the five food groups in pre-exposure while after exposure a total of (66.7 %) answered it correctly which shows that the knowledge level of the respondents has got increased after providing nutrition education in which balanced diet chart was shown and images related to the five food groups were discussed in Scene1. Shubhangini (2007) observed that adolescent period is characterized by heavy demands of calories and proteins.

From Table 1 it was observed that 90 per cent of the respondents of the post-exposure knew clearly that balanced diet is the requisite for the growth and development of adolescent girls as compared to the pre-exposure in which it was 78.3 per cent. Swaminathan (2009) observed that various groups of food stuffs such as energy yielding food, body building foods and protective foods should be given in a correct proportion so that the individuals are assured the minimum requirements of all the nutrients.

Table 2 shows the knowledge level of the respondents about calcium in which 58.3 per cent of the respondents knew that milk and green leafy vegetables are good sources of calcium in the pre-exposure data and after providing nutrition education which was shown on scene 1 of the developed film

**Table 1 : Knowledge and awareness scores regarding foods and diet**

Particulars	Age group 13-16 years (n=60)	
	Pre-data %	Post-data %
<b>Balanced diet means</b>		
Daily routine diet	43.3	33.3
Includes 5 food groups in the daily diet	21.7	66.7
In cereals and pulses	35.0	0.0
<b>Requisite for growth and development of adolescent girls</b>		
In balanced diet	78.3	90
In fruits and vegetables	5.0	6.7
In cereals and pulses	16.7	3.3

Particulars	Age group 13-16 years (n=60)	
	Pre-data %	Post-data %
<b>Good sources of calcium are</b>		
Milk and green leafy vegetables	58.3	86.7
Rice and wheat	35.0	10.0
Sugar	1.7	3.3
None of above	5.0	0
<b>Calcium is required in daily diet for</b>		
Growth of bones and teeth	40.0	76.7
Good sight	28.3	8.3
Healthy skin	28.3	11.7
None of above	3.3	3.3
<b>For making our bones strong we require</b>		
Milk and milk products	48.3	61.7
Meat-fish	33.3	35.0
Fruits	18.3	3.3
<b>The available source of present in green leafy vegetables and seasonal foods is</b>		
Fat	18.3	16.7
Iron	21.7	6.7
Protein	58.3	71.7
All above	0.0	5.0
<b>Rich dietary source of fat are</b>		
Pulses	30.0	13.3
Meat-fish	43.3	50.0
Green vegetables	23.3	35.0
Fruits	1.7	1.7
<b>In the body iron is needed for the</b>		
Maintenance of bones	28.3	28.3
Formation of teeth	16.7	3.3
Formation of blood and hemoglobin	55.0	68.3
<b>Interference of iron absorption is in the presence of</b>		
Vitamin C rich fruits	43.3	75.0
Tea	28.3	16.7
Milk	18.3	5.0
Don't know	11.7	3.3
<b>Rich dietary source of iron are</b>		
Green leafy vegetables	65.0	56.7
Gingely seeds, dates	15.0	43.3
Sugar	16.7	0.0
Don't know	3.3	0.0
<b>Recommended dietary amount of iron for adolescent girls</b>		
20 mg	65.0	11.7
35 mg	26.7	26.7
12 mg	5.0	10.0
10 mg	1.7	51.7

strip, in which images related to the developed film strip were discussed and the percentage raised to 86.7 per cent. Bock (2008) observed that good calcium nutritive the life span is one of the three well-known components in lowering the risk of development of osteoporosis. Key (2006) stated that 37 per cent of the total bone mass is deposited in adolescence, 85 per cent adolescent girls and 43 per cent boys have deficient calcium intake (ratio 2:1), and leading to low bone mass and risk of osteoporosis and fractured in adulthood. Findings revealed that in the pre-exposure data, 40 per cent of the respondents knew about the requirement of calcium and after providing nutrition education, it rose to 76.7 per cent. Antia *et al.* (2008) stated that most of the body calcium (99 %) is stored in the bones and teeth. Findings revealed that in overall percentage it was observed that 48.3 per cent of the respondents knew that milk and milk products are required for making our bones strong being the correct answer, likewise in the post –exposure data it is seen that 61.7 per cent of the respondents answered correctly. According to Srilakshmi (2007) the dairy foods are the major source of calcium because of the significant amount of the minerals present. Findings revealed that maximum of 58.3 per cent of the respondents answered that proteins are available in green leafy vegetables and seasonal food being the correct answer, likewise in the post –exposure data, it is seen that a maximum of 71.1 per cent of the respondents answered correctly that means the respondents grabbed the knowledge provided by the

researcher in a more better way and thereby percentage was also increased. It was observed that maximum of 43.3 per cent of the respondents answered as meat and fish are rich dietary source of fat being the correct answer in the pre-exposure data, likewise in the post–exposure data, it is seen the percentage rose to 50 per cent after providing nutrition which shows that the respondents gained knowledge in a more clear way which also shows that their knowledge got also increased. From the tabulated data of need of iron in the body, it is seen that 55 per cent of the respondents answered that iron is needed for the formation of blood and haemoglobin which rose to 68.3 per cent after providing nutrition education. It was observed that in the overall percentage of interference of iron absorption, it is seen that maximum of 43.3 per cent of the respondents answered as vitamin C rich fruits interfere iron absorption being the correct answer which rose to 75 per cent after providing nutrition education to the respondents. Findings revealed that in the overall percentage of sources of iron, it is seen that 15 per cent of the respondents answered as gingelly seeds and dates are good sources of iron being the correct answer, likewise in the post –exposure data, it was seen that 43.3 per cent of the respondents answered correctly. It was observed that the overall percentage of RDA for adolescent girls is seen that 1.7 per cent of the respondents answered as 10 mg is the recommended dietary amount of iron for adolescent girls, likewise in the post –exposure data, it is seen that 51.7 per cent of the respondents answered the same.

**Table 3 : Knowledge and awareness scores according among major deficiency disorder**

Particulars	Age group 13-16 years (n=60)	
	Pre-data %	Post-data %
<b>Anaemia is due to the deficiency of</b>		
Iron deficiency in daily diet	66.7	78.3
Fats and oil deficiency	21.7	15.0
Sugar deficiency	3.3	6.7
Don't know	8.3	0.0
<b>Symptoms of anaemia are</b>		
Weakness, pale tongue, tiredness	65.0	83.3
Stomach ache and dysentery	26.7	13.3
Vision problem	5.0	3.3
Don't know	1.7	0.0
<b>Requirement of vitamin A in our body is</b>		
Weight loose	48.3	31.7
Good eyesight and strong bone	38.3	56.7
Bone formation	10.0	11.7
None of above	1.7	0.0
<b>Disease caused due to lack of vitamin A are</b>		
Night blindness	60.0	85.0
Goitre	23.3	11.7
Pellagra	11.7	1.7
None of above	3.3	1.7

Findings of Table 3 revealed that in the overall percentage it is seen that 66.7 per cent of the respondents answered that anaemia is due to iron deficiency being the correct answer, likewise in the post-exposure data, it is seen that the percentage of the correct data rose to 78.3 per cent. After providing nutrition education which was in the form of film strip the level of knowledge got increased. Namitha *et al.* (2007) assessed the knowledge about symptoms, causes and consequences of anaemia and also the effectiveness of nutrition education intervention, the management of anaemia among adolescent girls and concluded that creating awareness about anaemia and effective management would be an ideal strategy in control of anaemia in the population. Devdas (2009) reported that anaemia is estimated to affect 3.5 million individuals in the developing world and more than 320 million people in India with high prevalence among women and children (40-80 %), pregnant women (60-70 %) and adolescent girls (50 %). Findings revealed that in the overall percentage, it is seen that 65 per cent of the respondents answered that weakness; pale tongue and tiredness are the symptoms of anaemia being the correct answer, likewise in the post-exposure data, it is seen that the percentage of the correct data rose to 83.3 per cent. Brahman *et al.* (2003) stated that iron deficiency anaemia is a major nutritional problem of the developing world including India, affecting mainly women of reproductive age, adolescent girls and young women. Wan *et al.* (2003) conducted a study to determine the changes of nutrition knowledge and attitude of 8 year old children after receiving nutrition education and showed a positive effect on the children's nutrition knowledge and attitude. Changing the dietary habits, control of parasites and nutrition education strategies, are long term measures applicable to situations where the prevalence and severity of anaemia are lower. Findings revealed that in the overall percentage, it is seen that 38.8 per cent of the respondents answered that for good sight and strong bones vitamin A is required being the correct answer, likewise in the post-exposure data, it is seen that the percentage of the correct data rose to 56.7 per cent. Ahmad (2003) reported that vitamin A deficiency is also prevalent among adults, especially in women of reproductive age. From

the tabulated data of Table 3 it is observed that 60 per cent of the respondents answered that night blindness is caused due to vitamin A deficiency being the correct answer, likewise in the post-exposure data, it is seen that the percentage of the correct data rose to 85 per cent which shows a positive impact of nutrition education provided to the adolescent girls.

Table 4 shows the average percentage of the knowledge level scores and it was found that in the pre-exposure data previously the percentage of excellent was nil but after the nutrition education provided to them, the percentage rose to 6.6, previously in the former data, the percentage of very good was 3.3 but in the later data it rose to 51.6 per cent. In the pre data, the percentage of good was 11.7 and in the post data, it rose to 26.6 per cent. Previously the percentage of fair was 61.6 but after that it came down to 13.2 per cent. Previously the percentage of poor data was 23.3 which later came down to 1.7 per cent. As the visual quality, sound clarity of the film strip was good so the respondents were able to understand the data very clearly. Local Hindi language was used in whole story of the film strip by the researchers, which was easy for the rural adolescent girls to understand in a more clear way.

#### Conclusion :

The film strip was successfully made by acquiring primary data from different sources like books, journals, internet etc. to impart the nutrition education among adolescent girls as the knowledge level got raised which was seen comparing it with the scores of pre-exposure data and post-exposure data. The prepared film strip was successfully projected in front of adolescent girls in the school situated in the tribal area and nutrition education was provided related to dietary guidelines and healthy living was shown on LCD projector successfully. Relevant knowledge was provided in 15 minutes video which was supported by various images related to the theme. Nutrition education regarding nutritional deficiencies, anemia related informations were discussed in the film strip. The pre and post-exposure data showed that knowledge level was improved as compared to the previous data as the knowledge was adapted by the adolescent girls in a more clear way. The post-exposure data were significantly higher than the pre-exposure data.

**Table 4 : Scores obtained by adolescent girls according to their knowledge level**

Particulars	Age group 13-16 years (n=60)	
	Pre-data %	Post-data %
<b>Scoring</b>		
<b>Knowledge level score</b>		
>85-Excellent	0	6.7
71-85-Very good	3.3	51.7
56-70-Good	11.7	26.7
40-55-Fair	61.7	13.2
15-39-Poor	23.3	1.7

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