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Interactive Nutrition Education Results in Improved Nutrition Knowledge and Healthy Eating Practices in Middle Childhood

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ABSTRACT: Nutrition education during childhood is an evidence-based effective way to foster healthy eating habits and improve health outcomes. The current study aimed to assess the effect of nutrition education on nutrition knowledge and healthy eating practices in middle childhood. The research design was Quasi Experimental Pre test-Post test Without Control Group. One school was selected on the basis of permission and 60 participants aged 6-10 years were selected conveniently. A structured questionnaire was developed by the researcher. It included demographic, knowledge and practice based questions. After the pretest interventions were administered in 3 sessions. The interventions included lecture, demonstration, several worksheets, pamphlets, home activities and interactive activities developed through review of literature. Same questionnaire was used for posttest. Complete data was available for 46 participants only, an attrition rate of 23%. Descriptive statistics, frequencies and percentages were calculated for all continuous and categorical variables using SPSS vs 20. Mean age of the participants was 7.260 years (+ 0.953). 54% were boys and 46% were girls. The post test results showed a remarkable improvement and majority of responses were correct. The participants gave 100% correct responses regarding balanced diet, milk products, green vegetables, fruits, and healthy eating. Practice about daily consumption of lentils/beans (43.5%), cereals (100%), homemade lunch (93.5%), 2 cups milk (82.6%), fruits (82.6%), and vegetables (100%). It was concluded that nutrition education can be effectively used to improve knowledge and practice of healthy eating among school going children, which in turn would result in improvement of their nutritional status.

Key words: Nutrition education, knowledge, attitude, healthy eating, school children.

INTRODUCTION

According to Contento, (2007), "Nutrition Education is any combination of educational strategies designed to facilitate voluntary adoption of food choices and other food and nutrition related behaviors conducive to health and well-being". Nutrition education helps the children to make healthy food choices. It also provides them with the knowledge and skills for living healthy lives and creates an environment where healthy choices are the easy choices. When combined with the access to nutritious, high-quality food, nutrition education is an effective strategy to encourage healthy eating behaviors and improve child health outcomes. Silveira et al., (2011) concluded that school based nutrition education significantly decreases BMI and overweight status. Some studies have also shown a positive impact on academic outcomes (Pucher et al., 2013). Nutrition education has also been effective in increasing preference for and creating positive attitudes towards fruits and vegetables among children (Prelip et al., 2012; Wall et al., 2012).

In Pakistan, 33.03% of children under the age of 5 are underweight, 53.38% of the children are stunted and wasting has been reported in 11.52% of the children, which clearly shows that the nutritional status in this country is poor (Finlay et al., 2011). Thus the current study was conducted with an aim to disseminate nutrition knowledge and to assess the effect of nutrition education on nutrition knowledge and healthy eating practices regarding healthy eating in middle childhood.

MATERIALS & METHODS

A Quasi Experimental Research design was employed without control group. A pre test was conducted to assess baseline knowledge and after interventions the effectiveness was evaluated by administering the same questionnaire as post test. Five schools were selected randomly in the city Lahore and the one which granted permission was selected. Two classes were allotted by the school administration thus approximately 60 participants were selected through non-probability convenience sampling technique. All of the participants were of same

age group approximately 6 to 10 years. The study was conducted on three consecutive days in May 2016. Complete data was available for 46 participants only as the study was carried out on 3 alternate days. Thus, the response rate was 77%.

A structured questionnaire was developed by the researchers for the current The questionnaire study. included demographic and knowledge based questions for example "Do you know what is balanced diet?" And practice based questions for example "How many glasses of milk do you drink every day?" For face and content validity the questionnaire was evaluated by specialist nutrition and research. The in same questionnaire was used for pre and post-test.

A model of plate was mound on the white board and shown to the participants. All the five food groups were elaborated in this model and their importance and role in our body was also discussed in the class. Some questions about the functions of each food group were also asked by the participants and the child who gave the right answer was rewarded with a prize.

Matching activity was also performed by the participants in which good eating habits were matched with the picture that showed outcome related to that habit. In the colouring worksheet participants had to colour healthy food items and the unhealthy food items were left blank. The participants took keen interest in completing the worksheets. A health tracking sheet was distributed among the participants which was basically a weekly eating plan and the participants were asked to take home and fill the chart and later evaluate their eating habits. Take home pamphlets were also given to the participants. The pamphlet was pictorial and had key messages in local language (Urdu) for better understanding. An interactive activity was conducted at the end for further reinforcement. A bucket full of healthy and unhealthy foods was placed and each child was asked to pick any food and place it in the correct baskets named "healthy foods" and "unhealthy foods".

On the first visit pre-tests was taken. They were briefed about aim of the research and what is expected of them. They were briefly explained about healthy eating practices. On the second visit a lecture was given to the participants about the importance of the food groups which should be included in my plate. Worksheets were distributed among them and they were asked to fill them. A take home pamphlet and health tracking sheet was also attached in the diaries of each student. On the third visit post-tests questionnaire were filled by the participants and interactive activity was conducted.

The current research was conducted as undergraduate course project. Written requests were sent to randomly selected schools and data was collected from the school which gave consent. Administration, faculty and students were briefed about the nature of study, its benefits and expectations from them. Anonymity of the participants and confidentiality of data was assured.

RESULTS

Descriptive statistics, frequencies and percentages were calculated for all continuous and categorical variables. Data was analyzed using Statistical Package for Social Sciences version 20. Mean age of the participants was 7.26 ± 0.953 years and ranged from 6-10 years. Figure 1 shows that almost half (n=25/46, 54%) of the participants were boys.



Fig. 1: Gender of the Participants

Nutritional knowledge		Pre-test	Post-test
		N (%)	N (%)
Do you know what is balanced diet?	No	5 (10.9)	0 (0)
	Yes	41 (89.1)	46 (100)
Name any 3 milk products.	Incorrect	4 (8.7)	0 (0)
	Correct	42 (91.3)	46 (100)
Name any 3 green vegetables.	Incorrect	3 (6.5)	0 (0)
	Correct	43 (93.5)	46 (100)
In Which group does bread belongs to?	Incorrect	5 (10.9)	0 (0)
	Correct	41 (89.1)	46 (100)
Which food group does fish belong to?	Incorrect	11 (23.9)	1 (2.2)
	Correct	35 (76.1)	45 (97.8)
Name any 5 fruits shown in the picture.	Incorrect	1 (2.2)	0 (0)
	Correct	45 (97.8)	46 (100)
Is the child eating healthy?	Yes	18 (29.1)	0 (0)
	No	28 (60.9)	46 (100)

Table 1: Frequency and Percentages of Responses to Nutrition Knowledge

In the pretest most of the participants could correctly name vegetables and fruits and correctly identify which food group a particular food belongs to. However, 29.1% participants, in the pretest, said that a child shown to be eating a burger was eating healthy and 23.9% could not tell fish belongs to which group? The posttest session conducted after the nutrition education session showed a visible improvement in the responses of the participants. 100% participants said that they now know what a balanced diet is. All the participants named milk, fruits and vegetables correctly as compared to in the pretest. There was a remarkable improvement in the answers of the participants who now declared that the child shown to be eating a burger was not eating healthy (Table 1).

Healthy Eating Practice		Pret-est	Post-test
		N (%)	N (%)
	Never	4 (8.7)	5 (10.9)
Do you eat vegetables daily?	Sometimes	9 (19.6)	21 (45.7)
	Usually	33 (71.7)	20 (43.5)
	Never	5 (10.9)	0 (0)
Do you eat lentils or beans daily?	Sometimes	21 (45.7)	0 (0)
	Usually	20 (43.5)	46 (100)
	Never	3 (6.5)	1 (2.2)
Do you eat roti, bread or rice daily?	Sometimes	18 (39.1)	2 (4.3)
	Usually	25 (54.3)	43 (93.5)
	Never	15 (32.6)	8 (17.4)
Do you bring homemade lunch to school?	Sometimes	16 (34.8)	38 (82.6)
	Usually	15 (32.6)	1 (2.2)
How many glasses of milk do you drink each day?	Incorrect	31 (67.4)	7 (15.2)
	Correct	15 (32.6)	38 (82.6)
Do you eat fruits daily?	Never	4 (8.7)	0 (0)
	Sometimes	18 (39.1)	0 (0)
	Usually	24 (52.2)	46 (100)

Table 2 Frequency and Percentages of Responses to Healthy Eating Practice

From the pretest questionnaires, it was evaluated that 71.7% participants consumed at least one serving of vegetable each day, 45.7% said that they sometimes eat beans or lentils in a week and 54.3% said that they usually eat cereal, bread or rice throughout the week which means that they have daily cereal consumption. 32.6% participants confessed that they never bring homemade lunch in school and buy food from the school canteen. 67.4% participants did not have adequate milk consumption per day (i.e. 2 glasses or more/day). The percentage of participants who stated that they eat fruits daily was recorded to be 52.2%. In the posttest 43.5% of the participants reported that they eat lentils or beans daily, whereas 100% participants said that they eat at least one serving of cereals daily. The improvement in the number of participants that started bringing homemade lunch was remarkable in the posttest (93.5%). 82.6% participants now had an adequate intake of milk each day which is

equal to 2 glasses or more per day. 82.6% and 100% participants answered that they eat fruits and vegetables daily, respectively (Table 2).

DISCUSSION

The current study aimed at providing nutrition education to school going children. It was conducted to evaluate the change in knowledge and practices of the participants through a series of interventions on 3 alternate days. In the study conducted by Anderson et al., (2005) there was a significant increase in knowledge about fruits and vegetables and fruit intake among intervention group which was provided nutrition knowledge regarding healthy food choices. In the current study, after nutrition education there was an increase in nutrition knowledge as evident by responses of the post test. Now the participants could better name the fruits and vegetables, and could tell which food group a particular food belongs to. Davis et al., (2003) also reported that, there was a significant increase in knowledge from group who received intervention regarding healthful eating and increasing physical activity. However, Warren et al., (2003) concluded that without targeting the family, drastic changes in practices could not be made based solely on nutrition education and that there was a need to their empower people and increase socioeconomic status as well to achieve the desired changes in practices.

Another research conducted by Nicklas et al., (2001) on influence of family and child care provider on preschool children's fruit, juice and vegetable consumption concluded that along with dietary intervention programs, social environment, families and child care settings should be considered where dietary habits are developed. But in the current study family members of the children could not be involved in the nutrition education, although an attempt was made through sending pictorial pamphlets with key messages in local language to involve and educate the family. Also the use of health tracking sheet parents could be at least sensitized on the topic that healthy eating is crucial for their children. Lytle et al., (2006) collectively evaluated results from the TEENS study on influencing healthful food choices in school and home environments and obtained mixed results.

The study has a major strength that multiple interactive interventions were employed and messages were reinforced through take home projects and pamphlets. Yet it had a few limitations. All the data was self report and long term change in practice and effect on nutritional status could not be measured because of time and resource restriction. The study was based solely on imparting nutrition knowledge and overlooked the factor of providing skill and empowering the participants to make the change.

CONCLUSION

It was concluded that nutrition education imparted through interactive methods significantly improves nutrition knowledge and self report healthy eating practices. It is highly recommended that nutrition education be made a part of curriculum in primary years when the foundations of good nutritional status are being laid and demands are high.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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