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Development and implementation of a need felt nutrition and health education program for school going children (7-9 Years)

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Abstract
Good nutrition promotes not only better physical health and reduced susceptibility to disease, but also contributes to cognitive development and academic success of children. Effective nutrition education helps to shape environmental factors and assists children in developing the skills needed to select healthy diets. The present research was implemented in Gyan Vidya Mandir School located in Sanganer Kachhi Basti of Jaipur city. A sample of 50 children aged 7-9 years were selected. Existing knowledge and health care practices were assessed with help of Questionnaire. A need based nutrition and health education programme was implemented with the help of well designed Information Education and Communication (IEC) material. Prior to intervention children had no knowledge about nutrition; food groups or water borne infections (20%); post intervention statically significant improvement in knowledge levels were observed. After the completion of intervention phase, 74% children were able to identify nutrients; 88% were able to identify food group. In pre intervention phase only 38% children said that physical activity is necessary, post intervention this number raised to 62%. Initially the subjects did not gave due importance to bathing post intervention 96% children started bathing regularly. The present study concludes that an effective nutrition education can be continued in school curriculum and can prove to be an effective means for improving the nutritional status of school-age children. Improving nutrition among school going children considered in a life course perspective which will benefit the health and nutrition of the next generation too.

Keywords: Health care practices, Information Education and Communication (IEC), Malnutrition, Educational Intervention

Introduction
Malnutrition plagues a disproportionately large number of children in India compared with most other countries. Malnutrition is more common in India than in Sub-Saharan Africa. One in every three malnourished children in the world lives in India. Malnutrition limits development and the capacity to learn. It also costs lives: about 50 per cent of all childhood deaths are attributed to malnutrition [2]. In most of the world, malnutrition is present in the form of under-nutrition, which is caused by a diet lacking adequate calories and protein. According to the World Health Organization (WHO), malnutrition is the gravest single threat to global public health [3].

Nutrition Education is the process by which people gain the knowledge, attitude and skills necessary for developing good dietary habits [4, 5]. Nutrition education has the potential to significantly alter the behavior patterns of pupils and can thereby lead to improved outlook on nutrition and hygiene [6]. Nutrition knowledge is most effective if there is a supportive environment and if it is linked with practical food, nutritional and environmental activities [7]. Studies suggest that nutrition knowledge may play a small but pivotal role in the adoption of healthier food habits [8].

Nutritional and health status are powerful influences on a child's learning and on how well a child performs in school. Common conditions of poor health and nutrition can affect education in a number of ways. This may have knock-on effects for their educational achievement and attainment, particularly where effects of disease and poor nutrition on brain development persist as cognitive impairments or emotional problems throughout the school-age years [11]. Schools are potentially excellent settings for nutrition education the school environment can

strongly influence children's eating behaviors. Keeping in mind the importance of nutrition and health education in prevention and management of nutritional deficiencies and promotion of hygienic health care practices we planned the present study with an objective to plan and implement a nutrition and health education program for school going children.

Materials and Methods

Locale of the study: The present study was implemented in Gyan Vidya Mandir School located in Sanganer Kachhi Basti of Jaipur city. A sample of 50 children both boys and girls aged 7-9 years were selected.

Study design

Sample Selection: All the children between 7-9 years attending the school were enlisted. The inclusion criteria of the subject included age, absence of diseases, family consent and regular attendance.

Data Collection: A questionnaire was frame to obtain general information Nutritional status was assessed using anthropometry data on height (measured with *height meter*), weight (measured with bathroom weighing balance) calculation of BMI = Weight (Kilogram) / Height (meter) [2]. WHO Z-Scores were used as standard for classifying the subjects in various grades of malnutrition using the criteria's of height for age, weight for age and BMI. Based on the data generated after assessment of nutritional knowledge and health practices of children a need felt nutrition and health education programme was developed in which several Information Education and Communication IEC material was developed like chart, posters, Bulletin Boards, flip books etc. with an objective to promote desirable food behaviour and nutritional practices, increase the diversity in daily diet, improving existing practices related to Hygiene and Sanitation. A well designed action plan and a proper communication strategy was used for its successful implementation of the programme. Impact evaluation of the programme was done using the same questionnaire and comparison of both pre and post intervention knowledge was statistically analysed.

Results and Discussions

Socio-demographic profile of Childrens: Total 50 School going children participated in the study. The findings revealed that 82% children were Hindu and 18% were Muslim; 58% were males and 42% females. Out of 50 children 40% children were from nuclear family while 60% children were from joint family. The housing pattern showed that 80% children's families lived in own houses and remaining 20% lived in rented house. The monthly income of majority of families (74%) was <5000 Rs and 26% >5000 Rs. Twenty two per cent children had <5 family members and 78% children had more than 5 family members. Approximately 62% parents completed their education till 5^{th}-8^{th}, 30% till 9^{th} to 10^{th} and only 14% parents till 11^{th}-12^{th} and 54% were illiterate none completed graduation. In the present study vegetarians predominated being 42% followed by non-vegetarians 36% and Ovo-vegetarians 22% (Table 1)

Anthropometry Measurements: According to height for age criteria Twenty four percent children were in were in normal category, 54% children were in -2 SD which indicated mild malnourishment and 22% children were in -3 SD indicating moderate malnourishment. Results of weight for age criteria that 30% children were in -1 SD ie normal, 48% children in -2 SD ie mildly underweight and 22% children in -3 SD ie moderately underweight. According to Body Mass Index 42% children were in -1 SD ie normal and 46% -2 SD ie thinness and 12% in -3 SD severe thinness(Table-2).

Nutrition Knowledge and Health Care Practices: Table-3 highlights the data of Pre and Post intervention, initial data highlights that children had no knowledge about nutrition then after providing knowledge 100% children able to answer about the questions asked. After the completion of intervention phase, 12% children said that fat, protein and carbohydrates are nutrients while 14% children said vitamin, mineral & water are the nutrients, and 74% children said fat, protein, carbohydrate, vitamin, mineral & water are all the nutrients. Before providing knowledge not any children know about food groups after giving knowledge to them 88% said cereal & cereal products are energy giving foods. Before the program 22% children said 2 meal pattern should be followed, 20% said that 3 meal pattern and 6% said 4 meal pattern while 52% children had no knowledge about how many numbers of meal we have to consume per day.

Fifty per cent bathe daily 50% children were not bathing daily. After post nutrition and health program 96% children were bathe regularly and rest of them (4%) no effect on them. Out of 50 children, 86% were used soap and water and 7% were used only water. 44% children clean his/her teeth daily, but after implementation of program 84% clean teeth daily. Only 18% children washed hands before their meal while 82% children was not wash hands before meal and 46% children use soap for washing hands and 24% used sand or soil; 30% used only water for hand washing Table-4. Statistical analysis of pre and post intervention data highlighted that the Nutrition and Health Education Programme resulted in statistically significantly improvement on the knowledge level of beneficiaries.

More than 200 million school age children are stunted and underweight and if no action is taken and at this rate, about one billion school children will be growing up by 2020 with impaired physical and mental development [12]. Malnutrition is the underlying cause of one third of the 7.6 million child deaths each year before their fifth birthday. Meeting this challenge is doubly urgent because among children who survive, chronic malnutrition causes devastating and irreversible damage [13]. Nabag [14] revealed a study showed that the prevalence of thinness was 37.2% which is higher than a prevalence of thinness in a study conducted in Sudan with a prevalence rate of 2.1%. Nutrition Education is the process by which people gain the knowledge, attitude and skills necessary for developing good dietary habits and other nutrition related practices conducive to health and well-being. Nutrition education is linked to increase in nutrition knowledge, attitudes and practices necessary for developing a healthy lifestyle in school children.

Conclusion

The present study draws very important conclusions that nutrition knowledge of school going children was able to make an appreciable dent in the existing Health and Nutrition practices of the school going children and we were able to give a deep insight on the knowledge of nutrition, nutrients, macronutrients and micronutrients. From this it can be implemented that nutrition education should be built in feature of school curricula to enhance student's knowledge of nutrition. This can help parents and community members to

prevent child malnutrition in all its forms. Nutritional and health status are powerful influences on a child's learning and how well a child performs in school. Weak health and poor nutrition among school –age children diminish their cognitive development.

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Table 1: Socio-Demographic Profile of Children

Socio-demographic Characteristics		Total (n=50)
Religion	Hindu	41(82)
	Muslim	9(18)
Sex	Male	29(58)
	Female	21(42)
Class	2nd	19(38)
	3rd	17(34)
	4th	14(28)
Type of family	Nuclear	20(40)
	Joint	30(60)
Type of construction	Kachha	14(28)
	Pakka	26(52)
	Semi-pakka	10(20)
Housing pattern	Own	40(80)
	Rented	10(20)
Income status	<5000/month	37(74)
	>5000/month	13(26)
Family members	<5	11(22)
	Above 5	39(78)
Literacy level (parents) (n=100)	5th-8th	31(62)
	9th-10th	15(30)
	11th-12th	7(14)
	Graduate	-
	Illiterate	27(54)
Dietary Pattern	Vegetarian	21(42)
	Non-Vegetarian	18(36)
	Ovo-Vegetarian	11(22)

Table 2: Anthropometric Measurements

Classification on the basis of Height for Age		
SD	**Classification**	**Total (n=50)**
-1	Normal	12 (24)
-2	Mildly Malnourished	27 (54)
-3	Moderately Malnourished	11 (22)
Classification on the basis of Weight for Age		
-1	Normal	15 (30)
-2	Mildly Underweight	24 (48)
-3	Moderately Underweight	11 (22)
Classification on the basis of BMI for Age		
-1	Normal	21 (42)
-2	Thinness	23 (46)
-3	Severe Thinness	6 (12)

*Figures in parenthesis denote percentages

Table 3: Impact of Nutrition and Health Education on School Going Children

Particular Awareness	Number and Percentage of School Going children		
	Pre Test n=50	**Post Test n= 50**	**Z (p) value**
Knowledge about nutrients			
Yes	-	50(100)	10(0)
No	50(100)	-	
Knowledge about balanced diet			
Yes	-	50(100)	9.80(0)
No	50(100)	-	
Knowledge about food groups			
Yes	-	50(100)	10(0)
No	50(100)	-	
Sources of Iron (with the help of photograph)			
Bajra			
Apple	1(2)	12(24)	
Dates	-	-	7.17(0)
All of the above	-	4(8)	

Don't know	- 49(98)	34(68) -	
Sources of vitamin-A (with the help of photograph) Fast food Milk Yellow, green vegetables Don't know	 - - - 50(100)	 - 6(12) 44(88) -	8.86(0)
Sources of calcium (with the help of photograph) Milk & milk products Cereals Pulses Don't know	 6(12) 1(2) - 43(86)	 43(86) 1(2) 2(4) 4(8)	7.40(0)
Meal pattern to be followed 2 3 4 Don't know	 11(22) 10(20) 3(6) 26(52)	 - 2(4) 48(96) -	9.00(0)

Figures in parenthesis denote percentage.

Table No. 4: Impacts on Personal and Environmental Hygiene

Particular Awareness	Number and Percentage of School Going children		
	Pre test n=50	Post test n=50	Z (p) value
Daily bathing is important Yes No	 25 (50) 25 (50)	 40(80) 10 (20)	3.14(0)
Clean teeth daily Yes No	 22(44) 28(56)	 42(84) 8(16)	4.16(0)
Trimming of nails Yes No	 41(82) 9(18)	 45(90) 5(10)	3.19(0)
Cleaning of hair Yes No	 30(60) 20(40)	 44(88) 6(12)	3.19(0.0007)
Cleaning of nose & eyes daily Yes No	 6(12) 44(88)	 40(80) 10(20)	6.82(0)
Washing hands before meal Yes No	 9(18) 41(82)	 43(86) 7(14)	6.80(0)
Material used for hand washing Soap & water Sand/Soil Only water Don't know	 25(50) 20(40) 5(10) -	 41(82) 7(14) 2(4) -	3.37(0.00036)
Wear washed clothes daily Yes No	 9(18) 41(82)	 35(70) 15(30)	5.12(0)
Water container needs cleaning & covering Yes No	 30(60) 20(40)	 50(100) -	5(0)
Boiling water kills germs Yes No Don't know	 5(10) 16(32) 29(58)	 50(100) - -	9.04(0)
Use of dustbins for waste disposal Yes No	 3(6) 47(94)	 39(78) 11(22)	7.297(0)

Figures in parenthesis denote percentage

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