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Improvement in Knowledge, Attitudes and Practices (KAP) in the school students after imparting Nutritional Awareness Package (NAP)

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Abstract
Background and Objectives: Adequate and balanced nutrition is one, of the most important, of the fundamental conditions needed for a healthy society. Good nutrition has the great impact on the overall development of an individual. Best age for gaining nutrition knowledge is school going age. Nutrition education during this period will have lifelong impact on individual as well as family and society. Nutrition education can be imparted through nutrition awareness package.
Materials and Methods: The study was planned to see the improvements of knowledge, attitude and practice among Government school children irrespective of gender. For nutrition awareness package (NAP) a questionnaire containing 55 questions related to food, different nutrients their function, balanced diet, nutrient deficiencies, good cooking practices and role of different nutrients was developed. Pre testing of questionnaire was done so that good quality data could be obtained. Nutrition awareness was given to 606 selected school children in the age group of 10-18 years for six weeks. Total eight visits to the schools were made for imparting nutrition education. During first week the pre testing about the knowledge awareness of the students were done by giving them the questionnaire. Lectures were delivered with the help of visual aids, i.e., charts and posters; play activities, quizzes etc. After six weeks, the same questionnaire was used for post testing so as to see the gain in nutritional knowledge. Aggregated scores were computed to find out the pre and post knowledge and increment in Knowledge, Attitudes and Practices was determined.
Results: Results revealed that nutrition education had a positive effect on increasing the knowledge scores of school children and was can be beneficial for improving the nutritional status of school children. Maximum knowledge gain was 50.66% and minimum was 34.92 % and which was reported in the age group of 10-12 years in case of boys and girls. Boys of age group 16-18 years showed the highest attitude gain i.e. 36.92% whereas the lowest score was 30.95% among girls of age group of 10-12 years. Boys of age group 16-18 years showed the highest practice gain i.e. 40.69% whereas the lowest score was 33.06% for girls of age group of 10-12 years.
Conclusion: Nutrition education can be used for developing good eating habits and improving nutritional knowledge of children. This will be helpful in improving the health of community.
Key words: Nutrition education, pre testing, post testing, knowledge, attitude, practice.Nutrients

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I. INTRODUCTION

Nutrition refers to the use of nutrients for growth, development, survival, and the promotion of health. Therefore, adequate and balanced nutrition is one, maybe the most important, of the fundamental conditions needed for a healthy society. It is also important for individuals within a society to be healthy and strong in order for the society to develop both economically and socially, as well as to prosper and continue its existence (Mahan LK et.al 2012 and Marotz LR. 2009). In India, 30 per cent of the school age children suffer from moderate to severe malnutrition. Major nutrition problems reported are anaemia, scurvy, rickets and PEM (Chandna and Sehgal, 1994). Nutritional problems not only affect growth and development but also affect future adversely. School children form an important vulnerable segment of population and constitute about 20 per cent of total population of India. School age is a dynamic period of growth and development as children undergo physical, mental, emotional and social changes during this stage. During school age promoting good health and nutrition are essential for effective growth and development (Chandna and Sehgal, 1994). Nutrition education

for school-age children not only positively affects their nutrition knowledge level and health, but also contributes to the development of behaviors that can promote health in families and societies because children can convey their new knowledge to their families. Therefore, the participation of families and teachers in training being provided to school-age children is important for reinforcing and maintaining children's knowledge (Stang J, et.al. 2006, Vereecken C and Maes L. 2010, Arslan P and Beyhan Y 2006 and Merdol KT 2012).

Nutrition education should become an integral part of a normal school day for elementary aged kids and should entail discussion, education, and activities that promote increased knowledge of nutrition and expanded healthy options at home and at school. Nutrition education is an important measure to improve dietary habits and food choices, since poor dietary habits and ignorance are the main reason for poor nutritional status of the adolescents. Hence the WHO has advocated mass information and awareness programs to be organized to alert government and communities about the importance of health education (Gupta and Kochar, 2008). According to Archana et.al, 2020 there was a significant improvement of nutritional knowledge of school children after imparting nutrition education.

Nutrition education can be an important tool for improving dietary habits and food choices. School age is the best age for sharing nutrition education and can be helpful in improving the nutritional status, children's health, self-esteem, life skills and behavior. Schools offer a readily available venue for reaching most of school age children. In addition to provide a site where interventions can be provided the programmes can be implemented that promote health and prevent many of the specific diseases. Adequate nutritional knowledge and healthy eating habit and physical exercise at this age would be a foundation for good health in adulthood. School-based nutrition education has shown some success in promoting appropriate dietary behaviors in children (Ruzita et.al, 2007). According to Gupta and Kochar (2008), nutrition educations were 1.67 times more effectual for improving the nutritional knowledge of adolescent girls. Nutrition education is a process by which knowledge, attitudes and practices about food and health are channelized into actual practices which are sound and consistent with the individual needs, purchasing power, food availability, health and socio-cultural background In the present study an attempt has been made to see the impact of imparting nutrition knowledge to school going children of government schools.

II. MATERIAL AND METHODS

1. Sampling and Design of study: This study was conducted in the two Government Senior Secondary school of District Una, Himachal Pradesh. Total 606 school children were imparted nutrition education. There were 327 girls and 279 boys. The study was conducted during the month of April and March 2022. The school children were divided into three different age groups i.e. 10-12 years, 13-15 years and 16-18 years. The age of the school children were ascertained from the school records. All the children registered and attending school at the time of the survey were included. After explaining the purpose of visit, a verbal consent was obtained from the Principal of the schools. The Nutrition education was imparted to both girls and boys; the purpose and importance of nutritional awareness programme were explained to them.

2. Tool for the study: A KAP (knowledge, attitude and practices) questionnaire was developed considering the important aspects of nutrition. The questionnaire was developed on the topics related to food and its importance; nutrients like carbohydrates, proteins, fats, vitamins and minerals about their functions in the body, their sources and deficiency disorders; eating habits, cooking practices; health and hygiene; balanced diet; methods of conservation of nutrients; faulty dietary habits and their improvement; digestion and absorption of food, etc. The children were pre tested on the basis of the questionnaire prepared and the scoring was done. Nutrition education was imparted to the students for the six weeks with the help of a module, which consisted of various KAP questions like importance of food, nutrition and nutrients and general discussion on nutrients in foods, knowledge related to human body, digestive system and concept of balanced diet, food groups and their importance and food pyramids, cooking methods and their effect on nutrients, relationship between good food and health, hygiene, safety and physical activity. Importance of food and its nutrients, vitamins and minerals, anemia, its causes, prevention and treatment, various lectures, discussions, games and quiz. The visual aid like posters and charts were provided to the school which was displayed in the corridor of the schools so that students can revise the module easily. After sixth session the students were evaluated on the same questionnaire for post evaluation. The questionnaire had a total of 55 questions 23 questions from knowledge test, 16 from attitude and 16 from practice of cooking and consumption. To assess the primary knowledge level, the students were directed to fill in the questionnaire independently. For this purpose, they were given 45 minutes and the filled forms were collected for evaluation.

Under the attitude test different questions were asked which included whether food should be covered while cooking; whether fruits and vegetables should be washed before cutting; is mustard oil is best for frying; is balanced diet good for health; should we drink tea with food; should we sieve the flour; is calcium good for teeth and bones; does deficiency of vitamin D lead to rickets in children; is calcium important for formation of bones and teeth; is vitamin C required for iron absorption; is iodine essential for physical and

mental development, does eating of sufficient food can protect from anemia; should not we use soaked water of pulses; does nutrients remain in food if we cook in pressure cooker.

Under the practice test the different questions were viz; whether vegetables are cut in large size, whether vegetables are washed before cutting, whether whey removed after curdling of milk in *paneer* preparation is used, does flour of cereals and pulses are used to make *parathas*, water used for soaking of rice to make rice, use of fruit juice and lassi in summer, use of lemon juice on salad, sowing of vegetables in kitchen garden, check the manufacture and expiry date of the product during purchase of processed food products., after frying use of left over oil after frying for making vegetables and dal, drinking of water immediately after eating food, use of fruits and vegetables without washing , eating of green leafy vegetables.

Statistical analysis of data

The collected and quantified data was coded and statistically analyzed using standard methods. (Sendecor and Cochran, 1967). The data was statistically analyzed using‘t’ test.

III. RESULTS AND DISCUSSION

As shown in the Table 1 the total numbers of students were 606 covered in two different Government Senior Secondary schools of District Una. There were 66 boys and 62 girls in the age group of 10-12 years, 74 boys and 68 girls in the age group of 13-15 years and 139 boys and 197 girls in the age group of 16-17 years. The total numbers of male were 279 as compared to 327 female.

Imparting nutrition education through six lectures and interactions with school going children helped in improving nutrition related knowledge of these students. The knowledge gain of boys and girls ranged between 47.26 to 50.66% and 34.92 to 44.95% across the different age groups. Maximum knowledge gain was 50.66% and minimum was 34.92 % and which was reported in the age group of 10-12 years in case of boys and 10-12 years in case of girls. The maximum knowledge gain was 44.95% and minimum 34.92% knowledge gain in case of girls of age group of 13-15 years and 10-12 years. In case of boys the maximum knowledge gain was 50.66% and minimum 47.26% knowledge gain in age group of 10-12 years and 16-18 years. The percent knowledge gain was 34.92% and 50.66% in case of girls and boys in the age group of 10-12 years. The percent knowledge gain was same in case of girls (44.95%) and boys (49.35%) in the age group of 13-15 years. The percent gain was more in case of boys as compared to girls. On an average there were 50.66, 49.35, 47.26 and 34.92, 44.95, 37.01 percent increase in knowledge of boys and girls. Maximum knowledge gain was more in boys as compared to girls. The t test for all the age groups was extremely significant.

The nutrition education helped in improving attitude of the students towards nutrition. The gain in attitude change ranged between 30.95 to 36.92% across the different age groups of boys and girls. Girls of age group 13-15 years showed the highest attitude gain i.e. 32.81% whereas the lowest score was 30.95% for girls of age group of 10-12 years. The attitude gain percent of boys and girls ranged between 35.56 to 36.92% and 30.95 to 32.81%. Attitude gain was more in boys as compared to girls.

The nutrition education helped in improving nutrition related practice gain of the boys and girls. The practice change gain ranged between 33.06 to 40.69% across the different age groups of boys and girls. Girls of 16-18 years showed the highest practice gain i.e. 36.29% whereas the lowest score was for girls of 10-12 years (33.06%).The practice change gain of boys and girls ranged between 36.65 to 40.69% and 33.06 to 36.29% in different age groups. Boys and girls of age group 16-18 years showed the highest practice gain i.e. 40.69and 36.29%.The nutritional related practices are also affected by the knowledge, attitude and practice of cooking by the mothers/ ladies at home of the students. Other factors like knowledge, attitude and nutritional practices adopted by the family and economic status of the family also affected the attitude and practices of the student/ child. Practice gain was more in boys than girls.

The results of the present study are in concurrence with the study of Chawla (1992) who reported significant improvement in knowledge and attitude of the females of Ludhiana towards good nutrition. After imparting nutrition education, these females tried to practice the same knowledge in their day-to-day life. The study of Jain and Chawla (1999) also found positive impact of nutrition education on school going adolescent girls of Kanpur. In 2020 Archana et.al, reported that increase in nutritional knowledge was more in the girls as compared to the boys.

IV. CONCLUSION

Adequate nutritious and balanced diets along with maintenance of health are the chief requirements in a society. There was significant improvement in the nutritional knowledge of the subjects after nutrition education. Hence, we can conclude from the present investigation that nutrition education is an important measure to improve dietary habits and food choices of the adolescent school children, as poor dietary habits and ignorance are the main reason for poor nutritional status of the school children. It can be concluded that boys have more knowledge and practice gain percent as compared with girls. The attitude gain percent was more in girls as compared with boys. The knowledge gain percent was 27.08, 30.33 and 33.95 in case of boys in the age

group of 10-12, 13-15 and 16-18 years. The practice gain percent was 30.75, 31.32 and 31.41 in case of boys in the age group of 10-12, 13-15 and 16-17 years. The attitude gain percent was 30.04 in case of girls in the age group of 16-17 years.

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Table 1 Age wise distribution of students in Schools

S.No.	Age Group	Boys	Girls
1.	10-12 years	66	62
2.	13-15 years	74	68
3.	16-18 years	139	197

Table 2 Gain in Knowledge of boys and girls of different age group. (mean (±SD))

	Age Group10-12		Age Group13-15		Age Group16-18	
	Boys (n=66)	Girls(n=62)	Boys (n=74)	Girls(n=68)	Boys (n=139)	Girls(n=197)
Pre testing	4.67±2.33	6.13±2.56	5.72±2.52	5.87±3.00	5.80±3.55	7.50±3.31
Post testing	16.32±2.96	14.16±3.64	17.07±2.81	16.21±3.22	16.67±3.19	16.02±3.16
T test	25.125**	14.208**	25.868**	19.374**	26.852**	26.132**
% Gain	50.66±16.19	34.92±17.28	49.35±14.60	44.95±15.48	47.26±17.88	37.01±15.87

Table 3 Gain in Attitude of boys and girls of different age group. (mean (±SD))

	Age Group10-12		Age Group13-15		Age Group16-18	
	Boys (n=66)	Girls(n=62)	Boys (n=74)	Girls(n=68)	Boys (n=139)	Girls(n=197)
Pre testing	6.12±2.28	6.27±2.72	6.35±2.15	6.25±2.43	6.56±2.23	6.56±2.20
Post testing	11.86±1.69	11.23±2.11	12.04±1.82	11.50±2.18	12.47±1.79	11.70±1.89
T test	16.431**	11.345**	17.376**	13.261**	24.367**	24.826**

% Gain	35.89±15.63	30.95±15.66	35.56±15.96	32.81±15.85	36.92±14.93	32.04±14.27

Table 4 Gain in Practice of boys and girls of different age group.(mean (±SD)

	Age Group10-12		Age Group13-15		Age Group16-18	
	Boys (n=66)	Girls(n=62)	Boys (n=74)	Girls(n=68)	Boys (n=139)	Girls(n=197)
Pre testing	6.24±2.31	6.60±2.24	6.23±1.85	6.57±2.70	6.07±2.26	5.92±2.11
Post testing	12.11±1.68	11.89±1.89	12.54±1.80	12.37±1.82	12.58±1.57	11.73±2.02
T test	16.696**	16.477**	21.029**	14.689**	27.891**	27.917**
% Gain	36.65±14.16	33.06±14.38	39.44±13.37	36.21±15.06	40.69±15.44	36.29±15.20

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