

Effectiveness of Webinar Assisted Nutritional Education Program on Knowledge and Attitude Regarding Nutrition in Special Situations Among Undergraduate Students of Institutes Under Kalgidhar Trust - Baru Sahib, India

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ABSTRACT:

Nutrition is a basic human necessity as well as a requirement for a long and healthy existence. During special occasions like fairs, festivals as well as in situations of disasters or pandemics like COVID 19, the nutrition pattern get affected and fluctuates which again highlights the importance of maintaining healthy nutrition status in the midst of these situations. The aim of study was to assess the effectiveness of nutritional education program on knowledge and attitude regarding nutrition in special situation among undergraduate students. Pre-experimental (one group pre and post- test design) was carried out in this study. Using non-probability voluntarily sampling, 156 undergraduate students were selected from selected institutes of Kalgidhar Trust Baru Sahib. Self-structured knowledge questionnaire and attitude scale were used to collect the data from study participants through google form media. After pre-test 2 online sessions conducted on nutrition in special situations through google meet, after 7 days of intervention post-test was conducted through same media. The results showed pre-test knowledge score was increase from 14.8 with SD 5.5 to post-test mean score was 25.3 with SD 3.5. Attitude pre-test score was increase from 32.3 with SD 2.6 to post-test mean score was 44.5 with a SD 2.62. In pre-test 104 (66.7%) had inadequate knowledge, 44 (28.2%) had moderate adequate knowledge and 8 (5.1%) had adequate knowledge; for attitude 4 (2.6%) had negative attitude, 149 (95.5%) had neutral attitude and 3(1.9%) had positive attitude. In post-test 9 (5.8%) had inadequate knowledge, 26 (16.7%) had moderate adequate knowledge and only a small number 121 (77.6%) had adequate knowledge; for attitude 8 (5.1%) had neutral attitude and 148(94.9%) had positive attitude no one had negative attitude. Thus, there was a significant increase in knowledge and attitude regarding nutrition in special situation at the level of $p < 0.001$ it revealed effectiveness of nutritional education program. Pre-test knowledge and attitude score had weak negative correlation ($r = -0.06$) and post-test knowledge and attitude score had moderate positive correlation ($r = 0.21$). The study findings revealed significant improvement in post-test knowledge and attitude which showed the effectiveness of nutritional education program. So webinar assisted nutritional

education program in special situations will help to reduce the health diseases and boost immunity among undergraduate students.

Keywords: Attitude, Knowledge, Nutrition, Special situations and undergraduate students

I. INTRODUCTION

Nutrition is a basic human necessity as well as a requirement for a long and healthy existence. A healthy diet is necessary for growth, development, and active beginning at a young age. About three million people worldwide suffer from malnourishment, with 25% in hospitals and 42% in long-term treatment.

Good nutrition can help to reduce the risk of some diseases, like heart diseases, diabetes, stroke, cancers, and osteoporosis, reduce high blood pressure, reduce cholesterol level, improve ability to fight with diseases, improve ability to recover from illness or injury and increase energy level. In 2020, it is anticipated that 149 million children under the age of five would be stunted, 45 million will be wasting, and 38.9 million will be overweight or obese. Under nutrition is responsible for almost 45 percent of mortality among children under the age of five.

According to recent projections, in addition to the 690 million people who are undernourished in 2019, at least another 83 million, and perhaps as many as 132 million, will be hungry in 2020. An estimated 370 million youngsters will be missing school meals by July 2020. With these additional shocks, children's dietary quantity and quality are expected to deteriorate further from the already precarious situation that existed prior to COVID-19, when only 29% of children aged 6 to 23 months were fed a minimally diverse diet and only 53 per cent received the minimum meal frequency.

Healthy eating patterns are not a solution for COVID-19, but they do optimize immune system function, increase immune metabolism, and are a controllable contributor to the development of chronic disease, which is strongly linked to COVID-19 mortality.

Knowledge of good food choices and food safety is required to improve eating habits and the adoption of a healthy diet. Nutritional education is various type of learning experiences compose to assist people to make healthy food choices and engaging in other nutrition-related behaviors.

According to recent research, a poor or unhealthy diet causes more fatalities worldwide than either smoking or hypertension. Poor eating was connected to 11 million fatalities worldwide in 2017, accounting for 22 percent of all deaths among adults, according to a research of 195 nations. According to global studies, nutritional inadequacies are a global problem, which explains why individuals all over the world are at a disadvantage during the COVID-19 pandemic.

College is a formative experience for students. Habits acquired during these years might last a person their entire life. If a student learns about nutrition in college and gains knowledge about how to eat a healthy diet, it's reasonable to suppose that their dietary intake will improve as well.

According to investigator healthy nutritional practices and eating habits can help to maintain adequate weight. During special occasions like fairs, festivals as well as while going through situations of disasters or pandemics like COVID 19, the nutrition pattern get affected and fluctuates which again highlights the importance of maintaining healthy nutrition status in the midst of these situations.

II. RESEARCH METHODOLOGY:

Pre experimental (One group pre and post-test) design was used in this study. The Population for study

was 156 undergraduate students selected by volunteer sampling technique from Institutes of (Eternal University, Baru Sahib and Akal University, Talwandi Sabo) under The Kalgidhar Trust Baru Sahib, India. The group included only those undergraduate student who were present at the time of data collection and who had internet facilities. Written permission taken from the vice chancellor of both Universities before data collection.

Tools for data collection: Data were collected using the self-structured knowledge questionnaire and 5 point attitude scale. Tool consist 3 sections.

Section A: Socio-demographic sheet it consist total 15 questions.

Section B: Self- structured knowledge questionnaire it consist total 30 questions related to nutrition in special situations i.e. common disasters, fairs, festivals and community meals and COVID 19 situation

Section C: Likert 5 points attitude scale it consist total 10 attitude statements from which 5 positive and 5 negative statements related to nutrition in special situations.

Scoring interpretation: Knowledge categories done according the original bloom cut off point and attitude categories done according the modified bloom cut off point.

Table 1: Scoring Key to assess the level of knowledge regarding nutrition in special situations:

Score	Category
Below 18 (less than 60%)	Inadequate knowledge
18-23 (60-79%)	Moderate Adequate knowledge
24-30 (80-100%)	Adequate knowledge

Table 2: Scoring Key to assess the type of attitude regarding nutrition in special situations:

Score	Category
<24 (<50 %)	Negative attitude
25-39 (50 -79 %)	Neutral attitude
40-50 (80-100%)	Positive attitude

In structured knowledge questionnaire which contained 30 items regarding nutrition in special situations, each right response carried one mark and wrong response carried zero marks. For structured attitude scale which contained 10 items regarding nutrition in special situations, for positive and for negative statements highest score was five.

Content validity was checked by the 7 expert’s opinion from the field of nursing for the relevance, adequacy and appropriateness of the tool. Reliability of self-structured knowledge questionnaire was **0.74** and reliability of attitude scale was **0.8**.

Data collection: Written permission was obtained from the concerned authorities before the data collection and the investigator familiarized herself with her study participants and explained the purpose

of the study to them by online mode. Duration of data collection was up to 2 weeks in the month of June-July, 2021. Data was collected through online mode with the help of google form. Firstly pre-test knowledge level and attitude were assessed by structured knowledge questionnaire and structured attitude scale. Time taken for the pre-test was 30 minutes. After pre-test 2 online sessions conducted on nutrition in special situations through google meet, then post-test was conducted on the 7th day using the same structured knowledge questionnaire and structured attitude scale.

Data Analysis: Analysis and interpretation of data was done according to the objective of the study by using the descriptive and inferential statistics.

III. RESULTS:

SECTION A: DISTRIBUTION OF DEMOGRAPHICAL VARIABLES OF UNDERGRADUATE STUDENTS:

**Table 3: Frequency and percentage distribution of undergraduate students based on socio-demographical variables:
N=156**

S. No	Variables	Profile of the participants	f	%
1	Age(in years)	18-21 years	114	73.1
		22 – 24 years	40	25.6
		25-27 years	2	1.3
2	Gender	Male	9	5.8
		Female	147	94.2
		Any Other	0	0
3	Name of course	B.A English	6	3.8
		B.A B.ED	35	22.4
		B.Sc. physics	5	3.2
		B.A Economics	10	6.4
		B.Sc. botany	4	2.6
		B.Sc. Nursing	71	45.5
		B.Sc. Medical	12	7.7
B.Sc. Agriculture	13	8.3		
4	Year of course	1 st year	41	26.3
		2 nd year	68	43.6
		3 rd year	43	27.6
		4 th year	4	2.6
5	Type of family	Nuclear	107	68.6
		Joint	46	29.5
		Extended	1	0.6
		broken family	2	1.3

6	Where do you stay now?	Hostel	92	59.0
		PG	1	0.6
		Day scholar	63	40.4
7	Education of father	No formal education	10	6.4
		Primary	12	7.7
		Middle	15	9.6
		Secondary	35	22.4
		Senior Secondary	40	25.6
		Graduation & Above graduation	44	28.2
8	Education of mother	No formal education	20	12.8
		Primary	10	6.4
		Middle	17	10.9
		Secondary	46	29.5
		Senior secondary	34	21.8
		Graduation & Above graduation	29	18.6
9	Socioeconomic status (monthly family income in rupees):	Below < 5,000	11	7.1
		5001- 10,000	37	23.7
		10,001- 20,000	37	23.7
		20,001- 30,000	36	23.1
		>30,001	35	22.4
10	Parenting by:	Biological parents	144	92.3
		Guardian	10	6.4
		Orphanage	1	0.6
		Adopted by other	1	0.6
11	Number of siblings	1	68	43.6
		2	61	39.1
		3 or more	27	17.3
12	Frequency of meals taken per day:	1 time per day	4	2.6
		2 times per day	54	34.6
		3 or more times per day	98	62.8
13	Dietary habits:	Vegetarian	120	76.9
		Non-vegetarian	24	15.4
		Eggetarian	12	7.7
14	Type of food preferences:	Homemade healthy food	122	78.2
		Homemade fast food	5	3.2
		Packed healthy food	2	1.3
		Packed fast food	2	1.3
		More than 1 option	5	16.0

15	Most preferred method of cooking:	Boiling	27	17.3
		Frying	29	18.6
		Baking	15	9.6
		Roasting	5	3.2
		Any other	14	9.0
		More than 1 option	66	42.3

Table 3: shows frequency and percentage distribution of students based on their demographical variables. Majority of students from age group 18-21 years i.e. 114 (73.1%), followed by 22 -24 years i.e. 40 (25.6%) and 25-27 years 2 (1.3 %). Majority of students were female i.e. 147 (94.2%) followed by male i.e. 9 (5.8 %).

In year of course 68 (43.6%) from 2nd year, 43 (27.6%) from 2nd year, 41 (26.3%) from 1st year and 4 (2.6%) from 4th year. In type of family majority of students from nuclear family i.e. 107 (68.6%), 46 (29.5%) from joint, 2 (1.3%) from broken family and 1 (0.6%) from extended family.

In current stay majority of students stay at hostel i.e. 92 (59%), 63(40.4%) day scholar and 1(0.6%) stay at PG. In education of father 44 (28.2%) were graduation & above graduation, 40 (25.6%) were senior secondary, 35 (2.4%) were secondary, 15 (9.6%) were middle, 12 (7.7%) were primary and 10 (6.4 %) were had no formal education. In education of mother 46 (29.5%) were secondary, 34 (21.8%) were senior secondary, 29 (18.6%) were graduation and & above graduation, 20 (12.8%) were had no formal education, 17 (10.9%) were middle, 10 (6.4%) were had primary education.

In socioeconomic status 37 (23.7%) were having monthly income 5001- 10,000, 37 (23.7%) were having monthly income 10,001- 20,000, 36 (23.1%) were having monthly income 20,001- 30,000, 35 (22.4%) were having monthly income >30,001 and 11 (7.1%) were having monthly income below 5,000. In parenting of student’s majority of students i.e. 144 (92.3%) parenting by biological parents, 10(6.4%) parenting by guardian, 1(0.6%) parenting by orphanage and 1(0.6%) parenting by foster. In number of siblings majority of students i.e. 68 (43.6%) were having 1 sibling followed by 61 (39.1%) were having 2 siblings and 27 (17.3%) were having 3 siblings.

In frequency of meals taken per day majority of students i.e. 98 (62.8%) taking meals 3 or more time per day, 54 (34/6%) taking meal 2 times per day and 4 (2.6%) were taking meal 1 time per day. In dietary habits majority of students i.e. 120 (76.9%) were vegetarian followed by 24 (15.4%) were non vegetarian and 12 (7.7%) were Eggetarian. In preferred method of cooking 66 (42.3%) were using more method of cooking, 29 (18.6%) were using frying method of cooking, 27 (17.3%) were using boiling method, 15 (9.6%) were using baking, 14 % (9%) were using any other method of cooking and 5 (3.2%) were using roasting method of cooking at home or hostel.

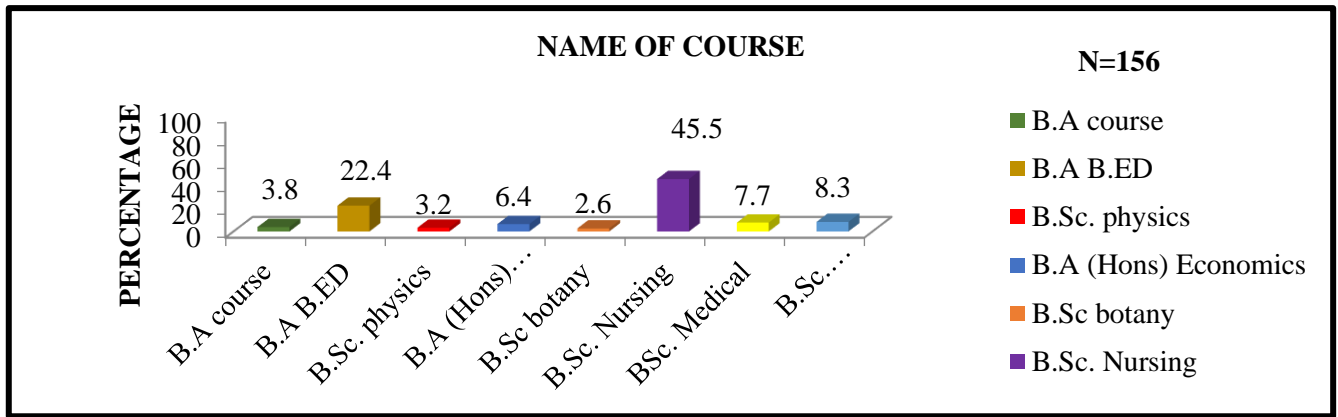


Figure 1: Bar Diagram depict name of courses 45.5% from B.Sc. Nursing, 22.4% from B.A B.ED, 8.3% from B.Sc. Agriculture, 7.7% from B.Sc. Medical, 6.4% from B.A Economics, 3.8% from B.A English, 3.2% from B.Sc. physics and 2.6%) from B.Sc. Botany.

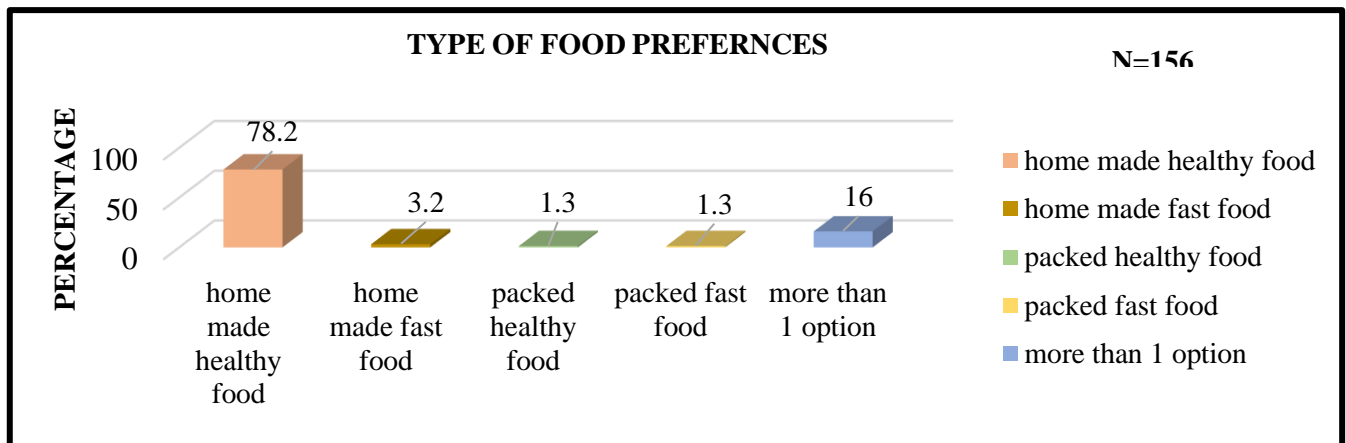


Figure 2: Bar diagram depict type of food preferences 78.2% preferred homemade healthy food, 3.2% preferred homemade fast food, 3.2% were preferred more type of food, 1.3 % were preferred packed healthy food and 1.3 % were preferred packed fast food.

SECTION B: PRE AND POST-TEST KNOWLEDGE AND ATTITUDE SCORE OF UNDERGRADUATE STUDENTS:

Table 4: Frequency and percentage distribution of undergraduate students based on Pre-test and post-test knowledge score:

S. No.	Knowledge	Pre Test		Post Test	
		f	%	f	%
1.	Inadequate knowledge (Below 18)	104	66.7	9	5.8
2.	Moderate adequate knowledge (18-23)	44	28.2	26	16.7
3.	Adequate knowledge (24-30)	8	5.1	121	77.6

Minimum score: 0

Maximum score: 30

Table 4: shows frequency and percentage distribution of students according to pre and post-test knowledge score categories, in pre-test 104 (66.7%) had inadequate knowledge, 44 (28.2%) had moderate

adequate knowledge and 8 (5.1%) had adequate knowledge. In post-test 9 (5.8%) had inadequate knowledge, 26(16.7%) had moderate adequate knowledge and 121 (77.6%) had adequate knowledge.

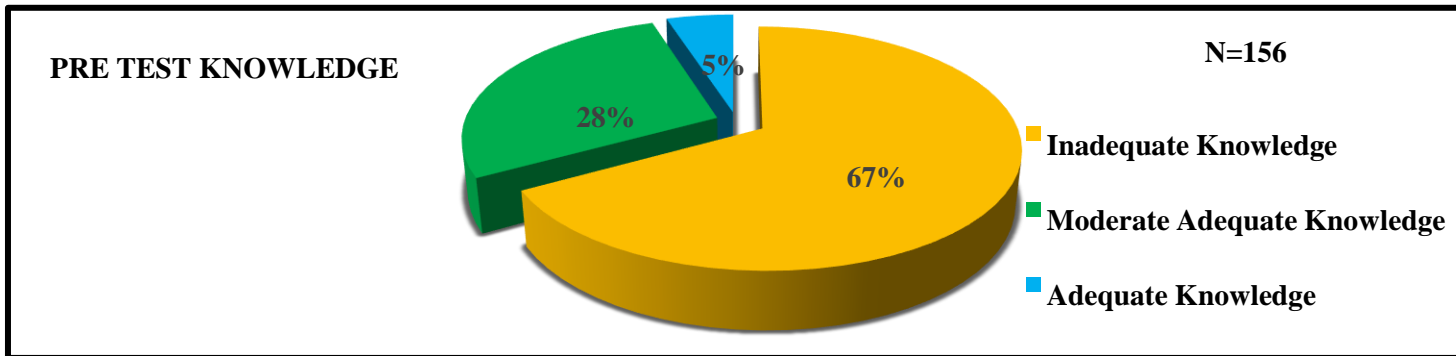


Figure 3: Pie diagram depict pre-test score 67% had inadequate knowledge 28 % had moderate adequate knowledge and 5.1 % had adequate knowledge.

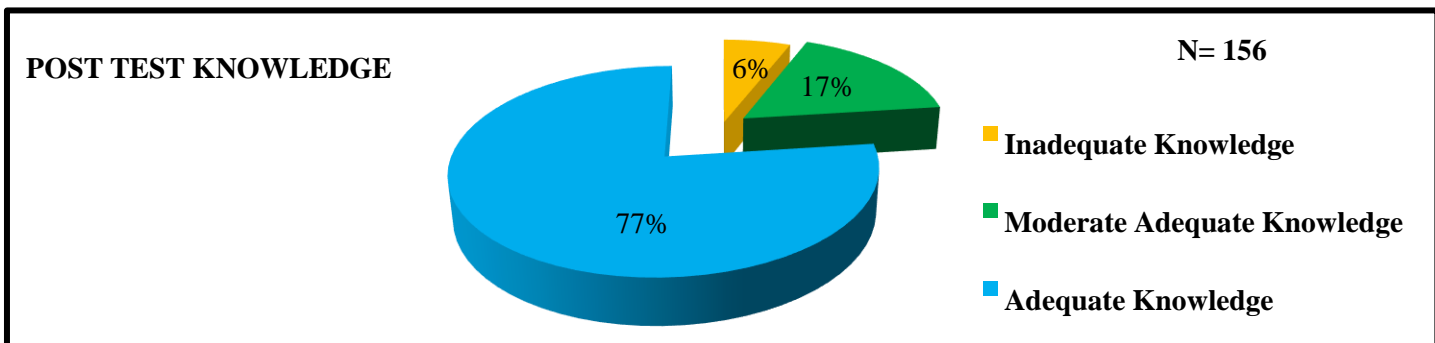


Figure 4: Pie diagram depict post-test score 6% had inadequate knowledge, 17% had moderate adequate knowledge and 77.6% had adequate knowledge.

Table 5: Frequency and percentage distribution of undergraduate students based on Pre-test and post-test attitude score:

S. No.	Attitude	N=156			
		Pre Test		Post Test	
		f	%	f	%
1.	negative attitude (<24)	4	2.6	0	0
2.	neutral attitude (25-39)	149	95.5	8	5.1
3.	positive attitude (40-50)	3	1.9	148	94.9

Minimum score: 10

Maximum score: 50

Table 5: shows frequency and percentage distribution of students according to pre and post-test attitude score categories, in pretest 4 (2.6%) had negative attitude, 149 (95.5%) had neutral attitude and 3(1.9%) had positive attitude. In post-test 0 (0%) had negative attitude, 8 (5.1%) had neutral attitude and 148(94.9%) had positive attitude.

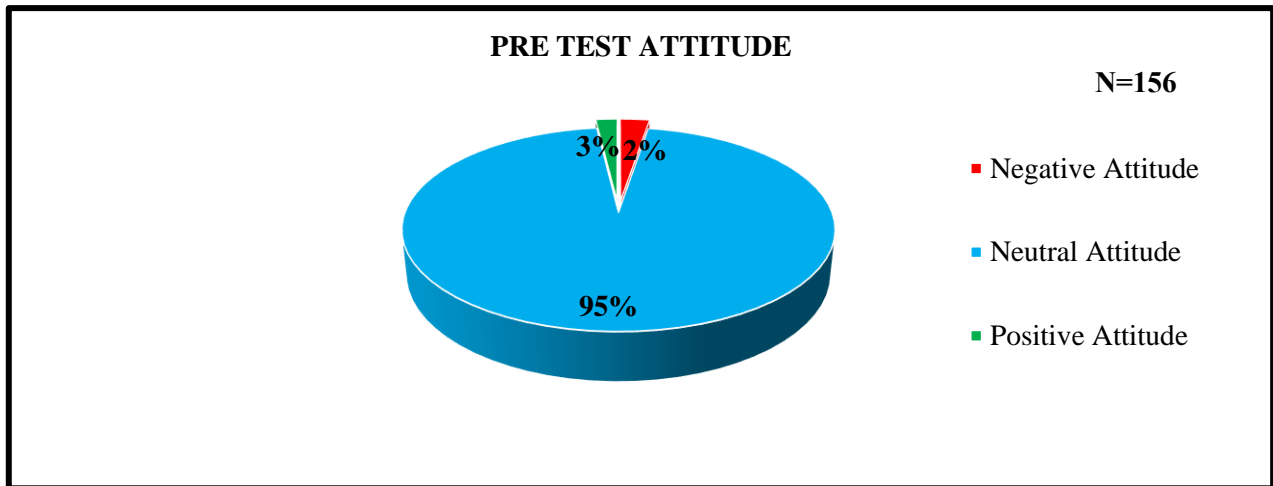


Figure 5: Pie diagram depict pre- test attitude score 2% had negative attitude, 95 % had neutral attitude and 2 % had positive attitude.

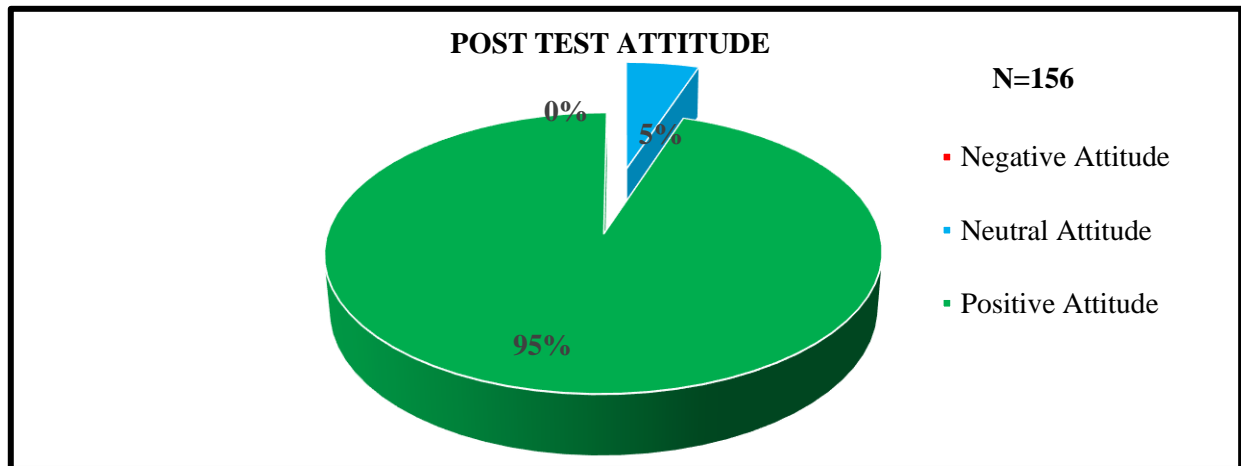


Figure 6: Pie diagram depict post-test attitude score 0% had negative attitude, 1% had neutral attitude and 148(94.9%) had positive attitude.

SECTION C: EFFECTIVENESS OF NUTRITIONAL EDUCATION PROGRAM ON KNOWLEDGE AND ATTITUDE OF UNDERGRADUATE STUDENTS REGARDING NUTRITION IN SPECIAL SITUATIONS:

Table 6: Mean, Mean difference and standard deviation of pre-test and post-test knowledge and attitude score among undergraduate students:

N=156

S. NO.	Effectiveness of nutritional education program	Pre-test (MEAN ±SD)	Post-test (MEAN ± SD)	Mean difference	t value	p value
1.	Knowledge score	(14.853±5.5808)	(25.3 ±3.5034)	10.45	19.72	.000**
2.	Attitude score	(32.321±2.6396)	(44.545±2.62)	12.23	39.53	.000**

** Statistically highly significant at $p < 0.001$

Table 6: paired t test results shows mean and standard deviation of pre and post test score of knowledge was 14.853 ± 5.5808 and 25.3 ± 3.5034 respectively. And the mean difference was 10.45, which was highly significant at p value .000 it means the knowledge of undergraduate students was improved after conduction of nutritional education program. The mean and standard deviation of pre and post test score of attitude was 32.321 ± 2.6396 and 44.545 ± 2.62 respectively. And the mean difference was 12.23, which was highly significant at p value .000 it means the attitude of undergraduate students was changed after conduction of nutritional education program. Hence **research hypothesis 1** was accepted at p value < 0.05 for both variables knowledge and attitude.

SECTION D: CORRELATION BETWEEN PRE AND POST TEST KNOWLEDGE AND ATTITUDE SCORE:

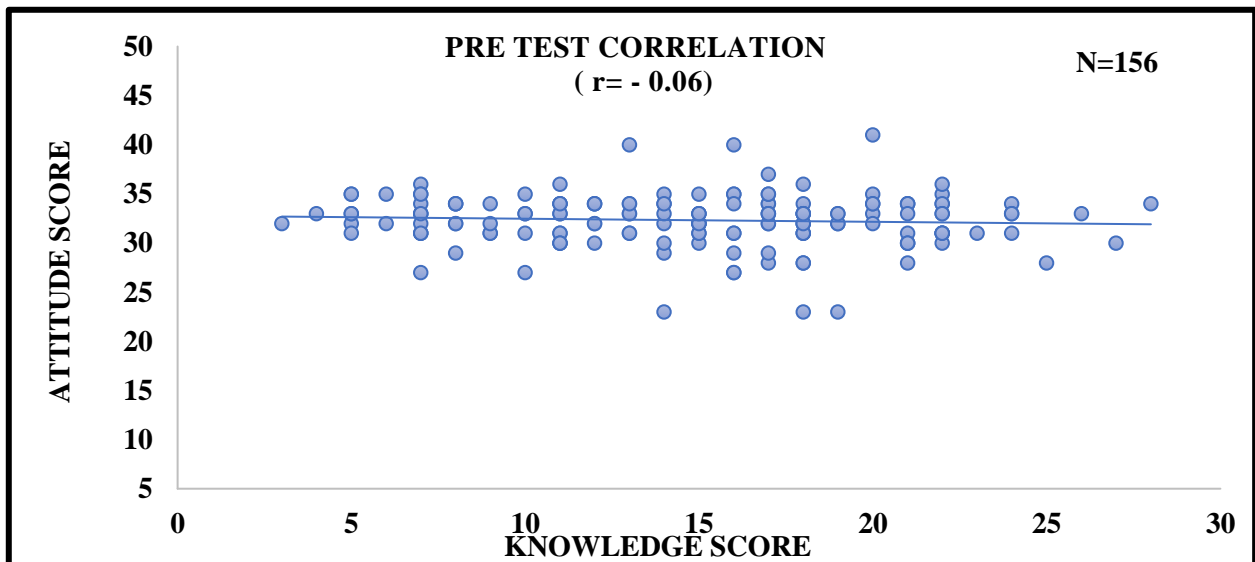


Figure 7: Scattered diagram depict the correlation between pre-test knowledge and attitude score. There was weak negative correlation in pre-test knowledge and attitude score ($r = -0.06$) based on Pearson correlation ‘r’ value.

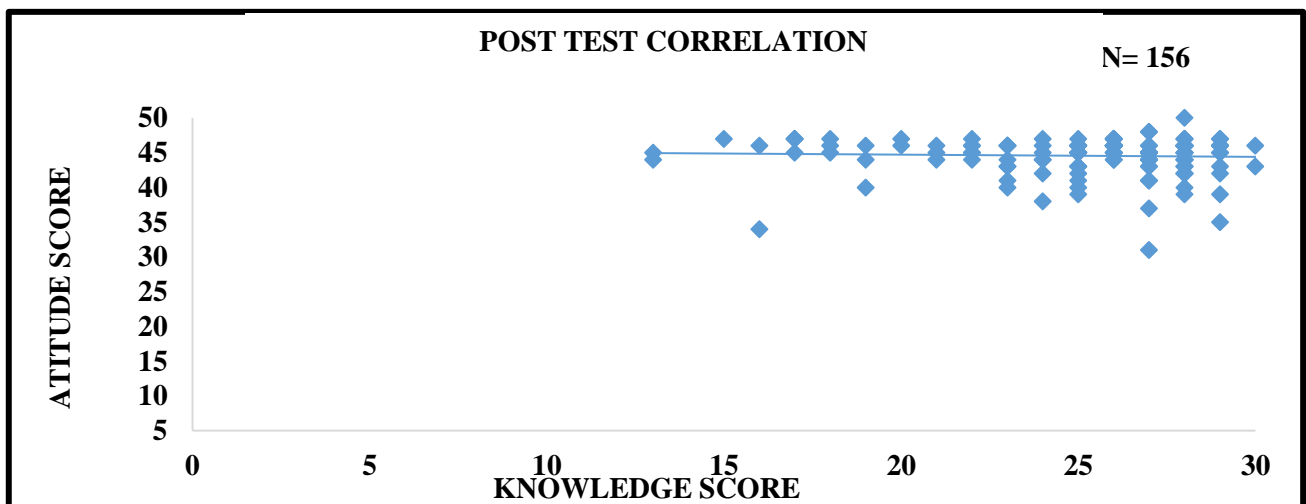


Figure 8: Scattered diagram depict the correlation between posttest knowledge and attitude score. There was moderate positive correlation in post-test knowledge and attitude score ($r= 0.21$) based on Pearson correlation ‘r’ value.

SECTION E: ASSOCIATION OF SELECTED SOCIO DEMOGRAPHICAL VARIABLES WITH PRE-TEST KNOWLEDGE AND ATTITUDE SCORE:

One way ANOVA test used to find association between socio-demographical variables and pre- test knowledge and attitude score. It was found that name of course ($p= 0.003$), education of father ($p=0.05$), parenting by ($p=0.02$), type of food preferences ($p=0.04$) and preferred method of cooking ($p=0.00$) were significantly associated with pre-test knowledge score. But no significant association between socio-demographical variables and pre-test attitude score.

IV: DISCUSSION:

In present study it was revealed that 104 (66.7%) had inadequate knowledge, 44 (28.2%) had moderate adequate knowledge and only a small number 8 (5.1%) had adequate knowledge before planned nutrition education program. Attitude results showed that 4 (2.6%) had negative attitude, 149 (95.5%) had neutral attitude and 3(1.9%) had positive attitude before planned nutrition education program.

In present study it was revealed that 9 (5.8%) had inadequate knowledge, 26 (16.7%) had moderate adequate knowledge and 121 (77.6%) had adequate knowledge after planned nutrition education program. Attitude results showed that 8 (5.1%) had neutral attitude and 148(94.9%) had positive attitude no one had negative attitude after planned nutrition education program.

Similar study done by **Husain W, Ashkanani F, Dwairji M. (2021)** on “Nutrition Knowledge among College of Basic Education Students in Kuwait.” found that majority of participants had a poor level of nutrition knowledge (84.1%), only 15.9% had a moderate level of knowledge, and none of the students had a high level of knowledge. Other similar study done by **Moore, J. B., L. Pawloski, et al. (2009)** on “The effect of a nutrition education program on the nutritional knowledge, hemoglobin levels, and nutritional status of Nicaraguan adolescent girls.” Results of study revealed that girl's and mothers' nutritional knowledge has improved significantly after nutrition education intervention in majority of cases.

In this study knowledge pre-test test mean score was 14.853 with a standard deviation 5.5 and post-test mean score was 25.3 with a standard deviation 3.5 and mean difference was 10.45, it shown increased knowledge score and statistical paired‘t’ test also indicated increased mean knowledge at the level of $p< 0.001$ (.000) it revealed nutrition education program was effective. The pre-test attitude mean score was 32.3 with a standard deviation 2.63 and post-test mean score was 44.5 with a standard deviation 2.62 and the mean difference was 12.23 it shown that there was change in positive attitude and statistical paired‘t’ test also indicated attitude score found to be increased at the level of $p< 0.001$ (.000) it revealed effectiveness of nutrition education program. **Hence, research hypothesis 1 was accepted at p value 0.000.**

A comparable study conducted by **M. Salem, G. and M. Said, R. (2018)** on “effect of Health Belief Model Based Nutrition Education on Dietary Habits of Secondary School Adolescent Girls in Sharkia Governorate.” The results of study reported that after nutritional education programme intervention, the mean nutrition knowledge score improved from 4.77 to 6.22. The average knowledge

of healthy and bad lifestyle practices and diets increased from 2.36 to 3.80. The average food safety knowledge score increased from 3.79 to 6.01. A similar study done by **Shen M, Hu M, Sun Z. (2015)** on “Assessment of School-Based Quasi-Experimental Nutrition and Food Safety Health Education for Primary School Students in Two Poverty-Stricken Counties of West China”. Results found that nutritional health education improved by 2-level differential models to 2.92, 3.78 and did not affect attitude.

The present study revealed there was association between the pre-test knowledge score and selected socio demographical variables. It was found that name of course ($p=0.003$), education of father ($p=0.05$), parenting by ($p=0.02$), type of food preferences ($p=0.04$) and preferred method of cooking ($p=0.00$) were significantly associated with pre-test knowledge score. Hence **research hypothesis 2** was accepted. But no association between the pre-test attitude score and selected socio demographical variables. Thus **research hypothesis 2** was rejected in this condition.

A similar study done by **Mansoorian M, Noori R, Khosravan S, Tabatabaeizadeh S, Khajavian N. (2021)** on “Nutritional knowledge, attitude and behaviours regarding Coronavirus Disease 2019 among residents of Gonabad, Iran.” Results shows no statistically important association with age, training, occupation, marital status or economic status in the mean values of nutritional knowledge and attitude.

V: CONCLUSION:

The present study was related to effectiveness of nutritional education program on knowledge and attitude among undergraduate students of Institutes of Eternal University, Baru Sahib and Akal University, Talwandi Sabo under the Kalgidhar Trust Baru Sahib. Nutritional education program was delivered by online mode to the study participants. Pre- test before NEP and post- test after NEP was done through google forms. The study findings revealed that there was significant improvement in post-test knowledge and attitude which showed the effectiveness of nutritional education program. So educating the undergraduate students regarding the nutrition in special situations will help to reduce the rate of health issues during pandemic and boost their immunity. It was the most effective intervention and was concerned with promoting health and preventing diseases.

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