

Effectiveness Of NLEP On Knowledge Regarding Prevention of Obesity Among Adolescents in Selected Schools

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Abstract:

Many school-based interventions for obesity prevention have been proposed with positive changes in behavior. **The objective** was to assess the effectiveness of a NLEP on prevention obesity among adolescents. Schools were randomized to intervention and control group. **Methods and materials:** Quantitative research approach with true experimental research design was used to find out the knowledge on prevention of obesity among school adolescents. The study was conducted among 200 adolescents studying 8th, 9th, 10th 11th and 12th in selected senior secondary schools, jalandhar, Punjab. Probability stratified sampling technique was used to select samples. Structured questionnaire was used to assess the knowledge of adolescents regarding prevention of obesity. **Major findings:** The overall analysis shows that poor knowledge was found in both experimental group 58% and control group 68% before the implementation of NLEP. In the experimental group, knowledge scores had improved after the implementation of NLEP, i.e., excellent knowledge is 36%, good knowledge is 47% and average knowledge was 17%. Further, in the control group, It was observed that in post-test 5% had very poor knowledge, 68% had poor knowledge, 20% was average knowledge and only 7% had good knowledge. From the findings it can be interpreted that NLEP improved the level of knowledge in the experimental group significantly than the control group. Pre test knowledge of adolescents regarding prevention of obesity shows that, out of 100 experimental samples (75%) children had inadequate knowledge, 35(23.6%) children had moderate adequate knowledge and 2(1.4%) children had adequate knowledge.

Conclusion: The results shown that, the nurse led educational package on prevention of obesity was improved the knowledge regarding prevention of obesity among the school adolescents.

Key words: Effectiveness, NLEP, Obesity, Prevention, Adolescents, Schools

Introduction:

Currently, the prevalence of overweight and obesity are increasing worldwide. Over 1.12 billion people worldwide are exposed to be overweight and obese up to 2030. Overweight and obesity prevalence is increasing specially in children and adolescents. Obesity ranks second after to smoking as a cause of premature death and a risk factor for development of cardiovascular diseases and metabolic disorders in adult and children. Obesity is rising within the adolescent population of India.(**Bhardwaj S, Misra A, Khurana L, 2012**)While the trend of obesity has stabilized in western developed nations,(**Ogden CL, Carroll MD, Curtin LR,2010**) it continues to rise in developing countries like India who are in final

stages of nutritional stabilization. With a large part of adolescents in India, obesity with its health risks, poses a big threat to the future health of the Indian society. The third National Family Health Survey (NFHS-3,2014) of India mentioned that, obesity increasing in north India. Obesity is the main determinant of preventable diseases. It happens from excess consumption of calories/energy compared to expenditure thus affecting health. Globally, children in particular are gaining weight, which tracks into adulthood thus increasing the danger of diseases.

Need and Significance of the study:

Obesity may be a chronic disease which has spread all over the world and threatens health of public globally. Its commonest cause of unhealthy diet often combined with lack of physical activity and is characterized by an excess of body fat or adiposity. It's most often defined by the body mass index (BMI) and therefore the use of body mass index for the age to define being overweight and obese in children and adolescents are well established for both clinical and public health applications. (Vaijayanthimala, M., & Jaikumar, M. 2019)

Overweight and obesity conditions are referred to as the most common eating disorders among children and adolescents within the USA. (Mazloomiy-Mahmoodabad, S. S., Navabi, Z. S., Ahmadi, A., & Askarishahi, M. 2017)

Overweight and obesity are a number of the foremost alarming challenges that humanity faces today. (Dang, D., & Dearholt, S. L. 2017).

. Globally, children in particular are gaining weight, which tracks into adulthood thus increasing the danger of diseases. (Ranjani, H., Pradeepa, R., Mehreen, T. S., Anjana, R. M., Anand, K., Garg, R., & Mohan, V. 2014)

The present century had noticed that undernourished and malnourished to overweight and obesity. This transition was initially reported in developed countries but now this phenomenon has been noticed in developing countries like India, Brazil, China etc (Popkin BM, Adair LS, Ng SW). In India, childhood obesity is an increasing public health problem, especially among the upper socioeconomic groups. In India, prevalence of childhood obesity and overweight within the age group of 9-15 years ranging from 9.9% to 18.5% . (Srivastava, D. K., Jain, P. K., Srivastav, M., Gour, N., Choubey, B., & Kumar, S.2015)

Overweight and obesity could also be a worldwide epidemic among children of all ages. According to the World Health organization (WHO), the prevalence of overweight and obesity in children rose by 47.1% between 1980 and 2013. In 2014, Childhood obesity within the United States is a significant issue. In a nationally representative study of US children and adolescents aged 2-19 years, the prevalence of obesity was estimated at 17% in 2011-2014; extreme obesity was 5.8% consistent with the foremost recent national Center for Health and statistics (NCHS) data (Williams, S. E., & Greene, J. L. 2018).

A descriptive cross sectional study was conducted to assess the knowledge and attitude of adolescents towards obesity in a private school in Thrissur district Kerala, India, among students of classes 9, 10, 11 and 12 in Devamatha public school, Thrissur in 2018. The result showed that among 179 participants 46.4% of adolescents had low knowledge on obesity, 46.9 had moderate knowledge, and only 6.7% of them had adequate knowledge on obesity. (Shaji, G., Navya, C., Joseph, Aswathy, M. , & Vidhu, J. 2018)

A study was conducted on assessment of knowledge, attitude and practice of adolescents towards obesity in the schools in Ismailia city – Egypt. Among 608 participants of whom 53.9% were females and 50% were in the age group of 14-15 years. The result showed that more than half (53.5%) of the studied participants have fair level of knowledge regarding healthy life style (diet/exercise) and causes and complications of obesity. Good level of knowledge was seen among 12.3% of the studied participants. While more than one third of them have poor knowledge (34.2%) having a particular level of knowledge regarding healthy life style and causes and complications of obesity. (**Mosleh ,A. Ismail., Mohammed, H. K., & Dalia, E. I. 2011**)

A study was conducted on effect of teaching programme on knowledge and attitude regarding prevention of obesity. The study was conducted among 50 adolescents aged 16 to 18 years studying in I and II PUC of Pre University College, Mangalore, Karnataka. The result revealed that ‘t’ value between pre-test and post-test attitude scores were statistically significant at 0.05 level of significance. The ‘t’ value ($t = 3.75$) is greater than the table value ($t(49) = 2.0096$) and revealed that the teaching programme on prevention of obesity was effective in improving the knowledge of adolescents. (**Prashanth, K., & Umarani, J. 2013**).

A study was conducted on Knowledge and attitude towards Obesity among Secondary School Students of Royal Crystal College, Ile-Ife, Nigeria. A sample of 400 student (age ranged from 10-21years) from royal crystal college (48% males and 52% females) were involved in the study. Majority of the respondents (47%) were between the ages of 13 and 15 years. The result showed that the total percentages of respondents with good level of knowledge are 58.2% (232), and 42.2% (168) respondents having poor knowledge level. (**Omotola, A. A., & AkeemAkinyemi, O. 2017**)

Nurses are well fit to educate the adolescents on prevention of obesity in schools. It is critical in collaborating educational programs that can significantly prevent health effects of obesity. Hence the investigator carried out this present study in schools of North India.

Objectives

1. To determine the pre-test level of knowledge of adolescents on prevention of obesity among adolescents in selected schools.
2. To evaluate the effectiveness of Nurse-Led Educational Package on prevention of obesity among adolescents in terms of gain in level of knowledge score.
3. Find the association between demographic variables and pre-test level of knowledge of adolescents on prevention of obesity among adolescents in selected schools.
4. Find the relationship between Knowledge of pre and post test scores of adolescents on prevention of obesity among adolescents in selected schools.

Hypotheses

All Hypotheses will be tested for level of significance at 0.05.

- ❖ H1- There will be a significant difference in knowledge score of adolescents between pre and posttest regarding prevention of obesity
- ❖ H2- The mean post-test knowledge score of adolescents regarding prevention of obesity in the experimental group will be significantly higher than that of the control group as measured through structured knowledge questionnaire. .
- ❖ H3- There will be a significant association between pre-test level of knowledge of adolescents on their age, type of family, religion, family income, source of knowledge, any previous Knowledge.

MATERIALS AND METHODOLOGY:

An evaluative study was conducted to find out the effectiveness of NLEP on prevention of obesity in terms of improvement in knowledge and attitude of adolescents. A true experimental pre- and post-test control group design was used. Stratified sampling technique was used to select the samples. The study was conducted at randomly selected schools of Adampur area. Following permission and consent process the adolescents were randomized into either the experimental or the control group using lottery technique. Sample consisted of 100 each in the experimental and control group.

DESCRIPTION OF THE TOOLS:

The researcher developed a Nurse Led Educational Teaching Module on prevention of obesity among adolescents. The tools have been developed by the authors on the basis of the objectives of the study and the tools been validated by the experts and computed for reliability. The data was collected through tools such as socio-demographic pro-forma, knowledge questionnaire on prevention of obesity ($r=0.92$), and adolescents attitude scale on obesity ($r=0.78$). Before implementation, pilot study was done to obtain the feasibility, accuracy as well as it was found that the tools are reliable.

Figure 1: Sequential steps in development of NLEP

DESCRIPTION OF THE INTERVENTION:

The NLEP on prevention of obesity was developed for adolescents based on the objectives, review of literature and the opinion of experts. The sequential steps involved in the development of NLEP are depicted as schematic representation as given in Figure 1.

The prevention of obesity aspects explained in NLEP is under following headings:

- Definition, Classification & Parameters to Assess Obesity
- Consequences/ Health Effects & Barriers
- Risk Factors, Causes & Clinical Manifestations
- Preventive Measures of Obesity
- Nutrition
- Physical activity & Rest and Sleep

FINDINGS OF THE STUDY:

Description of demographic data:

In the experimental group, highest percentage of the adolescents were in the age group of 15 and 17 years (24%) and control group (26%) group, Males and females in experimental group were 52% and 48% where as in control group were 53 and 47%, 8th standard to 12th standard from each class 20 adolescents from 13 to 17 and above age were selected. In experimental group highest percentage of adolescents were from nuclear family (83%), and in control group nuclear family (81%), Highest percentage in experimental group were Sikhs (55%), However in the control group, highest percentage (56%) of them were Sikhs. In control group highest percentage of them were in the income of < Rs 10,000 (36%). In the experimental group, more or less similar of them were in the income of above of < Rs 10,000 (32%). In the experimental group 85% had no previous knowledge and in the control group, 83% had no previous knowledge. Highest percentage of them in experimental (85%) and in control group (83%) has no information on prevention of obesity. In the experimental group, mean knowledge scores of post-test 27.13±3.45 was significantly higher than the pre-test mean knowledge score 10.08±4.50. The mean knowledge scores about prevention of obesity among adolescents are shown in table -1

**Table 1: Comparison of Paired t test to assess Pre and Post-test Knowledge scores of adolescents on prevention of obesity in Experimental and Control group
n=100+100= 200**

Observation	Experimental group		Control group		t-test
	Mean	SD	Mean	SD	
Pre-test	10.08	4.50	13.11	3.38	t=1.4982, p=.13726
Post-test	27.13	3.45	13.51	3.50	t=5.4574, p=.00001***
t-Test	t=29.08, p=.00001***		t=0.88, p=.37872		Highly significant

*** Very high significant at P0.00001

At pre-test statistically no significant difference was found in the level of Knowledge between Experimental and Control group ($t_{99}=1.4982$ $P<0.05$). Statistically positive significant improvement was found between experimental and control group in the Post test ($t=29.08$, $P=0.00001$ ***) using student independent t-test. Hence H_{03} was rejected. So, it can be interpreted that NLEP was effective.

**Table 2: Comparison of Overall Mean, SD and Mean Percentage of Experimental and Control group of Pre and Post – Test Attitude Scores of Adolescents on Prevention of Obesity.
n = (100+100) =200**

Observation	Experimental group		Control group		t-test	p-value
	Mean	SD	Mean	SD		

Pre-test	46.25	9.75	48.20	8.64	1.4982	.13726
Post-test	56.11	7.12	48.96	8.67	-5.4574	.00001
t-Test	8.70		0.87			
p-value	.00001		.38893			

***** Very high significant at p-0.00001**

At pre-test statistically no significant difference was found in the level of Knowledge between Experimental and Control Groups Pre-test value (t-test =1.498, p-value =0.13726). Statistically positive significant improvement was found between Experimental and Control Groups in the Post-test value (t-test value =-5.4574 p-value=.00001) using student independent t-test. H₀₄ was rejected. Hence it can be interpreted that NLEP was effective.

The computed statistical findings indicate that in experimental group there was significant improvement in knowledge, and attitude scores on prevention of obesity among adolescents. Therefore, it can be concluded that NLEP was effective.

Chi-square test was used to calculate the association. The pre-test knowledge, and attitude, is independent of all variables that are age sex, class, religion, income, type of family, previous knowledge and source of knowledge. Hence, the investigator accepted the null hypotheses for level of significance at 0.05. The pre-test knowledge, and attitude score of adolescents was independent of all demographic variables.

Correlation between Knowledge and Attitude among Adolescents on Prevention of Obesity in Experimental Group.

$$n = 100 + 100 = 20$$

Variables	Experimental group			
	Pre - Test		Post – Test	
	R-value	p-value	R-value	p-value
Knowledge and attitude	0.0972	.926046	-0.2624	.008458

Ethical Clearance:

The ethical clearance was obtained by the Himalayan University, Itanagar, Arunachal Pradesh after proposal submission. The written administrative permission was obtained from the school principals, Jalandhar. Consent and willingness were established from all the subjects who met inclusion criteria.

Results:

The highest percentage of the adolescents were in the age group of 15 and 17 years (24%) and in control group 26 year (26%), gender 52% male 48% female adolescents in experimental group, 53% male and 47% females in control group, class from 8th standard to 12th standard from each class 20 adolescents from 13 to 17 and above age were selected, nuclear family(83%) in experimental group 81% nuclear family, and Sikhs 55% respectively in experimental group. where as in control group majority 56% Sikhs, in experimental group 32% had monthly income of ,Rs 10,000, in control group 36% had monthly income of ,Rs 10,000, respectively. In experimental group 85% had no previous knowledge , in control group 83% had no previous knowledge, source of no information was 85% in experimental and 83% in control group had no health information respectively.

Table 1: Frequency and Percentage of Experimental and Control Group Level of Knowledge on Prevention of Obesity

n=(100+100)=200

Level of Knowledge	Experimental group				Control group			
	Pre test		Post Test		Pre test		Post test	
	f	%	f	%	f	%	f	%
Very Poor	32	32	0	0	8	8	5	5
Poor	58	58	0	0	65	65	68	68
Average	2	2	17	17	22	22	20	20
Good	8	8	47	47	5	5	7	7
Excellent	0	0	36	36	0	0	0	0

Table1 shows that poor knowledge was found in both experimental group 58% and control group 68% before the implementation of NLEP. In the experimental group, knowledge scores had improved after the implementation of NLEP, i.e., excellent knowledge is 36%, good knowledge is 47% and average knowledge was 17%.

Further, in the control group. It was observed that in post-test 5% had very poor knowledge, 68% had poor knowledge, 20% was average knowledge and only 7% had good knowledge. From the findings it can be interpreted that NLEP improved the level of knowledge in the experimental group significantly than the control group.

Comparison of Paired t test to assess Pre and Post-test Knowledge scores of adolescents on prevention of obesity in Control group

Observation	Experimental group		Control group	
	Mean	SD	Mean	SD
Pre-test	10.08	4.50	13.11	3.38
Post-test	27.13	3.45	13.51	3.50
t-Test	t=29.08, p=.00001***		t=0.88, p=.37872	

*** Very high significant at P0.00001

At pre test statistically no significant difference was found in the level of knowledge between experimental and control group.

Chi square test was used to calculate the association. In experimental and control group the pre and post test knowledge scores are independent of all variables that are age, gender class, type of family, religion, monthly income of family, previous knowledge and source of knowledge were non significant (P>0.01). Hence null hypotheses with regard to pre and post test knowledge scores and demographic variables are rejected.

Implications:

The findings of the study have implication for nursing practice, nursing education and research.

Nursing Practice

Nurse is the core member in preventive action and significant personnel in educating adolescents. The findings of the present study showed that NLEP was effective in improving the knowledge. The content of the NLEP will help the Nursing personnel in all areas like hospital, schools as well as community area and clinics for teaching the adolescents on prevention of obesity. The nurse educators in the schools can use the NLEP may be implemented to teach the adolescents and can motivate them to reduce weight and to live healthy life.. It provides a frame work that it helps adolescents to understand about illness, develop positive attitude towards obese adolescents and increases knowledge in taking care of self and others too. Thus, the NLEP should be practiced as a routine care.

Nursing Education

Considering the met and unmet needs of the adolescents in the schools, as an educator the nurse has to be encouraged in the preparation of interventional module for the adolescents and their family members. This NLEP can guide the educators to prepare modules based on their objectives. Continuing education programs for nurses can improve their competence and awareness about the importance of adherence in health care.

Nursing Research

- A longitudinal study is needed to measure the effect of NLEP overtime.
- A study can be conducted by using different instructional media for adolescents and young children who are at risk..

- The tools developed by the researcher for this study can be used with or without modifications in different settings.
- Needs of the adolescents who are at risk of obesity can be assessed and the particular aspects on nutrition and physical activity can be focused more and unhealthy foods can be retested.

Limitations

- Informal teaching by the health care professionals could not be controlled.
- No control over the diet and physical activity.

Recommendations

- The study could replicate on a larger sample.
- Longer follow up period may be used in order to understand the long-term effects of NLEP.
- Need based study to be designed and different innovative methods can be developed for the adolescents who are unable to read and write.
- A similar study with more sessions can be conducted.
- Stigma of the Indian culture to be studied. Myths and facts, misconception to be pointed out as a separate NLEP and effectiveness of that particular aspect to be considered.
- Routine therapeutic measures to be developed for the adolescents as NLEP, as motivational therapeutic intervention of adolescents.

Discussion:

In the experimental group the mean knowledge score of post-test was 27.13 ± 3.45 significantly higher than the pre-test 10.08 ± 4.50 , whereas, in control group, mean knowledge score of post-tests was 13.51 ± 3.50 was more or less similar in pre-test 13.11 ± 3.38 . The computed experimental group paired t test value ($t = 29.08$ $p < 0.0001$) found highly significant compared to control group ($t = 0.88$, $p < 0.378$). The findings of the present study indicate significant improvement in knowledge among the experimental group than the control group. Hence H_0 is rejected and H_1 is accepted. Hence it can be concluded that NLEP is effective in terms of gain in knowledge score.

A study (Geetha C. 2017) denotes that, out of 148 samples 111 (75%) had inadequate knowledge, 35(23.6%) children had moderately adequate knowledge and 2(1.4%) children had adequate knowledge. After the educational programme, the post test knowledge of 148 samples was, 84(56.8%) children had moderately adequate knowledge and 64(43.2%) children had adequate knowledge.-Similar findings were also reported (Lubna, M., T .2018) that, the mean level for knowledge was 4.57 (SD \pm 1.86) with a ranged from 0 - 10. Forty eight percent (377) of participants had poor knowledge (score 0 - 4); 46.8% (366) had moderate knowledge (score 5 - 7), and 5% (39) had good knowledge (score 5 - 7). Recent study also reported by Mangesh, V. (2019) pre test knowledge scores of high school adolescent, were revealed that most of them 30 (25%) had poor knowledge, 69(57.5%) had average knowledge and 21 (17.5%) had good knowledge. Post test knowledge scores of high school adolescent, revealed that most of them 118(98.33%) had good knowledge, 2(1.66) had average knowledge. Various similar types of studies to prove the effectiveness of educational intervention in terms of gain in knowledge are also found.

Conclusion:

From the findings it is clear that there was improvement in knowledge through NLEP in experimental group than control group. Therefore it is concluded that NELP helps in increasing knowledge of adolescents on prevention of obesity. Based on the study findings, it is concluded that all subjects have poor knowledge. Hence, those health personnel in contact with school adolescents should screen for health effects of obesity and motivate them to include good & nutritious food in their diet and to practice physical activity every day for one hour.

Conflict of Interest: None

Acknowledgement:

The authors express sincere thanks to all the experts who validated the tool and NELP. The authors also extended gratitude to all the school adolescents who participated in study.

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