



EFFECTIVENESS OF CONTEXTUAL TEACHING STRATEGY ON KNOWLEDGE AND ATTITUDE REGARDING CHILDHOOD OBESITY AMONG SCHOOL AGE CHILDREN AT SELECTED SCHOOL COIMBATORE

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ABSTRACT

Introduction : Childhood obesity is a significant public health concern on a global scale. School-age children's sedentary behavior is associated with an increased risk of adult obesity and heart disease.

Youngsters in this age range ought to engage in physical activity for at least one hour each day. The aim of the present study was to evaluate the effectiveness of contextual teaching strategy on knowledge and attitude regarding childhood obesity among school age children at selected school Coimbatore. **Methodology :** Pre-experimental one group pretest posttest design was adopted. The study was conducted in selected Higher Secondary school, Coimbatore. 60 school aged children were selected for this study by using probability simple random sampling techniques. Self-structured questionnaire and rating scale were used to assess the pretest level of knowledge and attitude regarding childhood obesity among school age children. After pretest, the contextual teaching strategy was provided to school aged children which include a power point teaching using a LCD projector on various aspects of childhood obesity for a group of 30 students for about one hour per and day three alternate days. The posttest was done on 8th day after intervention by using the same scales. The data analyzed by using descriptive and inferential statistics. **Results:** The study results revealed that, there was a mean difference noted between pretest and posttest level of knowledge & attitude regarding childhood obesity (8.23 & 7.37). The calculated knowledge and attitude paired 't' test values were 21.67 & 15 which were greater than table value ($t_v = 2.001$) and statistically significant at $p < 0.05$. There was a statistical significance noted between demographic variables such as mother's occupation ($F = 23.20, p < 0.05$), and socio economic status ($F = 14.21, p < 0.05$) with the level of attitude regarding childhood obesity among school age children.

Conclusion: The study concluded that, the contextual teaching strategy regarding childhood obesity has a positive effect on improving the knowledge and attitude of school age children. The researcher suggests that regular health education programs conducted by health personnel on childhood obesity should be implemented to increase the level of knowledge and foster positive attitudes, which in turn may help reduce childhood obesity and overweight.

KEYWORDS : Knowledge, attitude, teaching strategy, childhood obesity and school aged children.

INTRODUCTION :

Over the past few decades, inadequate physical activity has become one of the major risk factors for mortality and morbidity worldwide. ⁽¹⁾ The main component for improving health is physical activity. Both healthy weight gain and fat loss are significantly influenced by physical exercise. ⁽²⁾ Over the past 20 years, there has been a significant rise in the prevalence of obesity, a serious health issue. ⁽³⁾

Childhood obesity is a significant public health concern on a global scale. Childhood obesity defined as an excessive amount of body fat that is of sufficient magnitude to impair health is known as childhood obesity. It can be assumed that when caloric intake surpasses energy expenditure, obesity results. ⁽⁴⁾ Childhood obesity places the child at a higher risk for adult obesity and for certain diseases. School age child development is a range from 6 to 12 years of age. Children in this age group will differ greatly in terms of height, weight, and structure. ⁽⁵⁾

According to WHO (2024), 37 million children under the age of 5 were overweight in 2022. Over 390 million children and adolescents aged 5–19 years were overweight in 2022, including 160 million who were living with obesity. ⁽⁶⁾ Prevalence of overweight (including obesity) among children and adolescents aged 5–19 has risen dramatically from just 8% in 1990 to 20% in 2022. ⁽⁷⁾

In India, childhood obesity is a serious public health issue. The prevalence of childhood obesity was 8.4%, and the childhood overweight was 12.4%. Compared to female children, male children were shown to be more likely to develop obesity. By 2030, India will account for almost 11% of the worldwide burden of childhood obesity if current trends continue. ⁽⁸⁾ A study conducted among school children in Tamil Nadu, Coimbatore city, found the overall prevalence of obese

and overweight were 5.6% and 7.6, respectively. ⁽⁹⁾

The risk of obesity is influenced by a number of variables, including behavior, the environment, and genetic predispositions. Numerous comorbidities, including as hypertension, diabetes, premature puberty, irregular menstruation, non-alcoholic fatty liver diseases, polycystic ovarian syndrome, sleep apnea, asthma, musculoskeletal disorders, and mental health issues, are believed to be more likely to occur in children who are obese. ⁽¹⁰⁾

Diagnosis of overweight and obesity is made by measuring people's weight and height and by calculating the body mass index (BMI): weight (kg)/height² (m²). The body mass index is a surrogate marker of fatness and additional measurements, such as the waist circumference, can help the diagnosis of obesity. ⁽⁶⁾ In the pediatric age group, gender-specific BMI-for-age percentile curves are used to define overweight and obesity. Children and adolescents with a BMI over the 85th but less than the 95th percentile for age and gender are considered overweight and those with a BMI greater than the 95th percentile are considered obese. Children and adolescents with a BMI greater than the 99th percentile are considered severely obese. ⁽¹¹⁾ Skinfold thickness: Skinfold thickness measured over the subscapular, triceps or biceps regions is an indicator for be used with values more than 85th percentile being subcutaneous fat. ⁽¹²⁾

Regarding treatments for obesity, changes to the diet and level of physical activity of the child. The purpose of the treatment for obesity involves weight maintenance as opposed to weight loss. A low-calorie diet and weight-loss medications are typically used to prevent people from gaining weight or developing abdominal obesity. ⁽¹³⁾ Every student's daily routine should include physical exercise (PE), as it is a crucial component of a healthy lifestyle. Students of all ages

benefit greatly from physical activity, which can enhance social skills, academic achievement, and mental and physical health.⁽¹⁴⁾ The students needed school based intervention to maintain healthy weight. The school-based intervention was effective in increasing health knowledge in the intervention as compared with the control School. Secondly, it was effective in improving certain dietary Behaviors. Utilizing health care professionals in the classroom to Teach students appropriate lifestyles and actually measuring Cardiovascular risk factors to increase awareness among students Was effective in increasing overall knowledge.⁽¹⁵⁾

In Tamil Nadu high prevalence of childhood obesity was found. However, none of these studies assessed knowledge or attitudes towards obesity among school aged children. Many of the conducted studies have concentrated on knowledge, attitudes and perception of parents and healthcare workers about childhood obesity. Hence the gap in knowledge is growing risks that necessitate the need to systematically investigate the knowledge of obesity among school aged children. Based on the findings planned teaching programmers can be conducted in different settings like schools, colleges, and the community. So, the researchers interested to do this study.

STATEMENT OF THE PROBLEM

Effectiveness of contextual teaching strategy on knowledge and attitude regarding childhood obesity among school age children at selected school Coimbatore.

OBJECTIVES

- To assess the level of knowledge and attitude regarding childhood obesity among school age children.
- To evaluate the effectiveness of contextual teaching strategy on knowledge and attitude regarding childhood obesity among school age children.
- To determine the relationship between knowledge and attitude regarding childhood obesity among school age children.
- To find out the association between the pretest level of knowledge and attitude regarding childhood obesity with selected demographic variables among school age children.

HYPOTHESES

- H₁: There will be a significant difference in the pretest and posttest level of knowledge and attitude regarding childhood obesity among school age children.
- H₂: There will be a significant relationship between knowledge and attitude regarding childhood obesity among school age children
- H₃: There will be a significant association between the pretest level of knowledge and attitude regarding childhood obesity with selected demographic variables among school age children.

ASSUMPTIONS

- Knowledge influences practice
- Attitude develops knowledge to judge themselves and others.
- Contextual teaching strategy helps the school age children to gain adequate knowledge and to develop positive attitude regarding childhood obesity

DELIMITATIONS

1. The data collection period for the study was limited to 30 days.
2. It is limited to 60 participants.
3. It is conducted only among school age children who were present at the time of data collection.

RESEARCH APPROACH: Quantitative research approach was adopted.

MATERIALS AND METHODS

STUDY DESIGN : A quantitative Pre-experimental one-group pretest posttest design was adopted.

SETTING OF THE STUDY: The study was conducted in selected Matriculation Higher Secondary School, Coimbatore.

STUDY POPULATION:

Target Population: In this study the target population was both male and female school age children.

Accessible Population: In this study the accessible population was school age children who were studying 6th and 7th standard based on the inclusion criteria and who were studying in selected Matriculation Higher Secondary School, Coimbatore.

SAMPLE : In this study the samples consist of school age children (11-12 years) and studying 6th and 7th standard at selected Matriculation Higher Secondary School, Coimbatore and those who fulfilled the inclusion criteria during the period of data collection were included.

SAMPLING TECHNIQUE & SAMPLE SIZE

Sampling Technique: Probability simple random sampling technique was used.

Sample Size

The sample size calculated for the current study was 60 school age children (11-12 years). It was calculated by power analysis formula.

$$N = \frac{Z^2 \times N \times SD^2p}{(N-1)E^2 + Z^2 \times SD^2p}$$

N = size of your study population

E²= acceptable error

SD²p = standard deviation of a population

Z² = standard variation at a given confidence level.

$$N = \frac{1.96 \times 180 \times 2.57}{(180-1)0.06 + 1.96 \times 2.57}$$

$$N = \frac{906.696}{(180-1)0.06 + 1.96 \times 2.57}$$

$$N = \frac{906.696}{179 \times 0.06 + 1.96 \times 2.57}$$

$$N = \frac{906.696}{10.74 + 5.03}$$

$$N = \frac{906.696}{15.77}$$

$$N = 57.5$$

CRITERIA OF THE SELECTION FOR SAMPLE

Inclusion criteria

- School age children who were
- aged between 11-12 years
- studying 6th and 7th standard
- willing to participate in the study
- speak and write Tamil or English

Exclusion criteria

- School age children who were
- having intellectual disability
- have mental illness
- Physically sick

RESEARCH VARIABLES

Independent Variable : Contextual teaching strategy

Dependent Variable: knowledge and attitude regarding childhood obesity among school age children

DESCRIPTION OF TOOL

Instruments used for data collection consisted of the following sections.

Section A : Demographic variables

Section B : Knowledge assessment questionnaire regarding childhood obesity

Section C : Attitude assessment rating scale regarding childhood obesity

Section A – Demographic Variables

This section focuses on the demographic characteristics. Variables such as age, gender, religion, educational status of both the mother and father, occupational status of parents, socio economic status, residential area, number of siblings, dietary pattern and doing regular exercise.

Section B – Knowledge assessment questionnaire regarding childhood obesity

30 multiple choices questions based on childhood obesity and it was developed by the researcher. Score '1' will be given for right answer; '0' for wrong answer. The score range from 0 to 30. It will be classified as 0-10 (inadequate knowledge), 11-20 (moderately adequate knowledge) and 21-30 (adequate knowledge).

Table 1 : Scoring Interpretation of Knowledge assessment questionnaire regarding childhood obesity

Score/Grade	Level of knowledge
0-10	Inadequate knowledge
11-20	Moderately adequate knowledge
21-30	Adequate knowledge

Section C : Attitude assessment rating checklist regarding childhood obesity

12 items with 5 point likert scale were developed by the investigator based on previous literature regarding childhood obesity. The scoring scale in this questionnaire was denoting "strongly agree" with a score of five and "strongly disagree" with a score of one. Questions 1,3,4,6, 7 & 11 were scored negatively. The total score varied from 0 to 48, and scores of 0–16, 17–32, and 33–48 represented unfavorable attitude, moderately favorable attitude, and favorable attitude toward the childhood obesity, respectively.

Table 2 : Scoring Interpretation of Attitude assessment rating scale regarding childhood obesity

Score/Grade	Level of Attitude
0–16	Unfavorable attitude
17–32	Moderately favorable attitude
33–48	Favorable attitude

VALIDITY OF THE TOOL: The tool and teaching content was validated by subject experts.

RELIABILITY OF THE TOOL: The reliability of the knowledge and attitude tools were tested by split half method and inter-rater method. The obtained 'r' values for Knowledge assessment questionnaire and attitude assessment rating scales were 0.90 & 0.88, respectively.

DATA COLLECTION PROCEDURE

The data collection was carried out for one month. The formal written permission was obtained from the selected Matriculation Higher Secondary School, Coimbatore, Principal, Texcity College of nursing, Coimbatore and college correspondence Texcity College of nursing, Coimbatore. The Institutional Ethics Committee for students gave the approval to conduct the study. A sample of 60 school age children was selected using the simple random sampling technique based on inclusion and exclusion criteria. The purposes of the study and their right to participate or withdraw from the study were explained to the patients for obtaining the written parental consent and assent consent.

Baseline data on demographic variables were collected using interview technique and other dependent variable level of knowledge, and attitude regarding childhood obesity were checked by self-administered and self-structured questionnaire and rating scale by maintaining privacy. Ethical principles were adhered too throughout the study. After the pretest, the investigator provided contextual teaching strategy was provided to school age children which include a power point teaching using a LCD projector on various aspects of childhood obesity like meaning, incidence, causes, prediction of obesity, management and preventive measures for one hour per day and three alternate days. After the intervention, the post test was done on 8th day by using same questionnaire & rating scale.

PLAN AND DATA ANALYSIS : The collected data will be grouped and it was analyzed by descriptive and inferential statistics.

ETHICAL CONSIDERATION : Ethical clearance for the study was given by the ethical committee of the Texcity College of Nursing on 20/01/2025. Written permission was obtained from the concerned authority, and informed assent was secured from the students. Subjects privacy, anonymity and confidentiality of the data was guarded. Scientific objectivity of the study was maintained with honesty and impartiality

RESULTS

The study had 60 school aged children. The demographic data is shown in (Table -3). Out of 60 participants, 46 (76.67%) of them belonged to 12- 13 years and 35 (58.33%) were females. Regarding Association, there was no statistical significance noted between demographic variables with the level of knowledge but there was a statistical significance noted between demographic variables such as mother's occupation ($\chi^2 = 23.20$, $p < 0.05$), and socio economic status ($\chi^2 = 14.21$, $p < 0.05$) with the level of attitude regarding childhood obesity among school age children. Hence H_3 is retained for variables mother's occupation and economic status only. It showed in Table -3.

Knowledge regarding childhood obesity during pretest, majority 37 (61.67%) of the participants had inadequate knowledge, whereas during posttest, majority 43 (71.67%) of the participants had moderately adequate knowledge and 17 (28.33%) of the participants had adequate knowledge regarding childhood obesity. Regarding attitude, during pretest majority 56 (93.33%) of the participants had moderately unfavorable attitude whereas during posttest, 28 (46.67%) of the participants had moderately favorable attitude and 32 (53.33%) of them had favorable attitude. Frequency and percentage distribution of study participants based on the level of knowledge & attitude regarding childhood obesity is showed in (Table -4).

Table -3 : Association between the pretest knowledge and attitude scores with their selected demographic variables

S. N O	Demographic variables	Total Number of Participants (n=60)	Knowledge	Attitude	Table value	
		f	Chi-square	Chi-square		
1	Age in year a.10-11 b.11-12 c.12-13	13 46	1.66 21.67 76.67	$\chi^2 = 1.94$	$\chi^2 = 0.09$	tv=9.48 d.f = 4
2	Gender a.Male b.Female	25 35	41.67 58.33	$\chi^2 = 0.05$	$\chi^2 = 0.12$	tv=5.99 d.f = 2

3	Mother's occupation	52	86.67	$\chi^2 =$	$\chi^2 =$	tv=12.
	a.Housewife	4	6.67	5.75	23.2	59
	b.Self-employed	1	1.67	0*	d.f = 6	
	c.Government employee	3	5			
	d.Private employee					
4	Father's occupation	0	0	$\chi^2 =$	$\chi^2 =$	tv=12.
	a.Unemployed	3	5	8.78	9.91	59
	b.Self-employed	5	8.33		d.f = 6	
	c.Government employee	52	86.67			
	d.Private employee					
5	Socio economic status	3	5	$\chi^2 =$	$\chi^2 =$	tv=9.4
	a.Lower class	49	81.67	5.89	14.	8
	b.Middle class	8	13.33	21*	d.f = 4	
	c.High class					
6	Doing regular exercise	10	16.67	$\chi^2 =$	$\chi^2 =$	tv=5.9
	a.Yes	90	83.33	0.35	0.85	9
	b.No				d.f = 2	

Note: * $p < 0.05$, S = Significant

There was a mean differences noted between pretest and posttest level of knowledge & attitude regarding childhood obesity (8.23 & 7.37). The calculated paired 't' value for knowledge and attitude were 21.67 & 15 which was greater than table value (tv=2.001) and statistically significant at $p < 0.05$. Its indicated contextual teaching was very effective to improving the level of knowledge & attitude regarding childhood obesity. Hence the H_1 was retained for the knowledge & attitude regarding childhood obesity. It showed in Table -5.

Table -4 : Frequency and percentage distribution samples according to their level of knowledge n=60

Variables	Level of knowledge regarding childhood obesity	Number of participants			
		Pretest	Posttest		
		f	%	f	%
Level of knowledge	Inadequate (1-10)	37	61.67	0	0
	Moderately Adequate (11-20)	23	38.33	43	71.67
	Adequate (21-30)	0	0	17	28.33
Level of attitude	Unfavorable attitude (12-28)	4	6.67	0	0
	Moderately unfavorable attitude (29-44)	56	93.33	28	46.67
	Favorable attitude (45-60)	0	0	32	53.33

Table -5 : Mean, mean difference, standard deviation and t-value according to the pretest and posttest level of knowledge & Attitude n=60

Variables	Level of knowledge & attitude regarding childhood obesity	Mean and standard deviation	Mean difference	Paired 't' test and p value	Table value & df
Knowledge	Pretest	10.13±2.38	8.23	t=21.67	tv=2.00
	Posttest	18.36±3.47		p=0.05*	1 df=59
Attitude	Pretest	36.26±4.76	7.37	t=15	tv=2.00
	Posttest	43.63±4.68		p=0.05*	1 df=59

Note: * $p < 0.05$, S = Significant

There was a negative correlation found between knowledge and attitude regarding childhood obesity among school age children which was not statistically significant at p value < 0.05 . Hence the H_2 was rejected. It showed in Table -6.

Table-6 : Relationship between the level of knowledge and attitude regarding childhood obesity n=60

Variables	Mean and standard deviation	Mean difference	Correlation 'r' value and p value
Knowledge	10.13±2.38	26.13	r=-0.01
Attitude	36.26±4.76		

DISCUSSION

This study had 60 school aged children. Out of 60 participants, 76.67% of them belonged to 12- 13 years and 58.33% were females. During pretest majority 61.67% had inadequate knowledge whereas during posttest, 71.67% had moderately adequate knowledge and 28.33% had adequate knowledge regarding childhood obesity. It can be attributed to the effectiveness of contextual teaching on knowledge of childhood obesity among school age children.

The above findings were supported by study of Geetha C., Jeyalakshmi S & Kamalam S where they observed that, before educational programme 75% children had inadequate knowledge whereas after intervention 56.8% had moderate level of knowledge and 43.2% children had adequate knowledge.⁽¹⁶⁾

The present study found that, during pretest majority 93.33% had moderately unfavorable attitude whereas during posttest, 46.67% had moderately favorable attitude and 53.33% of them had favorable attitude. It can be attributed to the effectiveness of contextual teaching on attitude of childhood obesity among school age children.

A similar study was conducted in Dar es Salaam, Tanzania among primary school children, the results revealed that, a good number of the children 72.1% were aware that they can be affected by obesity. Majority of them had negative attitude towards obesity and various factors leading to or resulting from childhood obesity. Knowledge about childhood obesity among primary school children is moderate and have negative attitude towards obesity.⁽¹⁷⁾

The present study found that, the calculated knowledge 't' value was 21.67 which was greater than table value (tv=2.001) and statistically significant at $p < 0.05$. Its indicated contextual teaching was very effective to improving the level of knowledge regarding childhood obesity. Hence the H_1 was retained for the knowledge regarding childhood obesity.

In Eastern India, a quasi – experimental study was conducted among School Going Adolescents; in interventional group before educational intervention majority 61% had aware about obesity whereas after educational intervention majority 91% had awareness about obesity and which was statistically significant at $p = 0.05$. It was indicated educational package was very effective to improve the level of knowledge.⁽¹⁸⁾

The present study found that, the calculated attitude 't' value was 15 which was greater than table value (2.001) and statistically significant at $p < 0.05$. Its indicated contextual teaching was very effective to improving the level of attitude regarding childhood obesity. Hence the H_1 was retained for the attitude regarding childhood obesity.

The above findings were supported by study of Isha where she found that there was a mean difference between pretest and posttest level of knowledge and attitude regarding childhood obesity. The calculated t values of knowledge and attitude were -15.36 & -9.86, respectively. Which were statistically significant at $p = 0.05$.⁽¹⁹⁾

There was a negative correlation found between knowledge and attitude regarding childhood obesity among school age children which was not statistically significant at p value

<0.05. Hence the H_2 was rejected. The finding of this study were contrast to the study conducted in Tamil Nadu, Coimbatore which showed that, there was a positive correlation (0.30) between pretest level of knowledge and attitude which was not statistically significant.⁽²⁰⁾

The present study found that, there was no statistical significance noted between demographic variables with the level of knowledge regarding childhood obesity among school age children. Hence H_3 is rejected. There was a statistical significance noted between demographic variables such as mother's occupation ($\chi^2 = 23.20, p < 0.05$), and socio economic status ($\chi^2 = 14.21, p < 0.05$) with the level of attitude regarding childhood obesity among school age children. Hence H_2 is retained for variables mother's occupation and economic status only.

A similar study was conducted at Kaski, Nepal among the School Going Adolescents, the results were contrast to our results, there was a significant association between adolescent's level of Knowledge and socio-demographic variable of sex with p value is less than 0.05 ($P = 0.00$).⁽²¹⁾

The present study was limited to School aged children studying in the same school were included and Study results may not generalizable to all age group. Few studies were recommended in future which were a phenomenological study can be conducted to assess the obesity complications among school age children and explore their feelings, a similar study can be conducted for large sample, over general population and in two different settings, a comparative study can be conducted with two intervention, a cross sectional study can be conducted to identify the factors involved in childhood obesity among school age children.

CONCLUSION

Low level of knowledge and attitude of childhood obesity was found among school age children. The presence of low level of knowledge and attitude of childhood obesity was increased by contextual teaching strategy regarding childhood obesity. Contextual teaching strategy regarding childhood obesity will be promote to improve the level of knowledge and attitude regarding childhood obesity and which has positive effect on improving knowledge and attitude of childhood obesity among school age children. Thus they expressed gained greater level of knowledge and attitude and assured that they will practice it regularly in their day to day life.

Conflict of interest : None

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