

**EFFECTIVENESS OF SCHOOL BASED INTERVENTION ON
KNOWLEDGE, PRACTICES AND BIOPHYSIOLOGICAL
PARAMETERS OF NON COMMUNICABLE DISEASES (NCD'S)
AMONG THE OBESE ADOLESCENTS**

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ABSTRACT

A True experimental study to assess the effectiveness of school based intervention on knowledge, practices, and bio- physiological parameters of Non communicable diseases (NCD's) among the obese adolescents at selected school Chennai was carried out with Quantitative Approach. A true experimental design was adopted for this study to accomplish the objectives of the study. The independent variable of the study was School Based Intervention which included information transfer, dietary modification and physical activity modification and the dependent variables of the study were Knowledge, Practice and Bio physiological parameters. The samples of the study were obese adolescents between the age group of 12-19 years. Simple random sampling technique was used to select the study participants. The data was collected using Screening tool to identify the obese adolescents. Structured Questionnaire was used to assess the knowledge on various aspects of NCD's. Dietary practices were assessed by Food Frequency Questionnaire, (FFQ), assessment of missed meal, food items consumed in last week and dietary practices check list and a check list used to Assess physical activity practices. Then the Administration of School Based Intervention for a period of six month was executed. Daily follow up was done by the volunteer teachers and

Investigator followed the samples by monthly visits. Then the post test was conducted after 3rd and 6th month. The obtained data was analyzed using descriptive and inferential statistics and revealed that effectiveness of School Based Intervention On knowledge, study group gained 23.8% whereas control group gained 4.7% score, on dietary habits, study group gained 15.0% whereas control group gained 2.1% score on physical activity practice score, experimental group gained 16.5% whereas control group gained 2.7% score. On the bio physiological parameter, the statistically significant difference was found for DBP only. Though there was difference for other parameters it was not statistically significant.

KEY WORDS:

School Based Intervention Program, knowledge, practices, and bio- physiological parameters of Non communicable diseases (NCD's), Food Frequency Questionnaire, (FFQ), assessment of missed meal, food items consumed in last week and dietary practices & physical activity check list.

INTRODUCTION

Adolescent obesity has been an important topic of focus for the field of Adolescent Medicine for decades. Formerly obesity was a serious but rare condition among youth but over the last 20 years it has become a global pandemic threatening widespread consequences for the health and wellbeing of a significant portion of the world's population. Complications such as diabetes, hypercholesterolemia, hypertension, cancer, and depression, are predicted to be increasing at a rapid pace as today's adolescents become adults.

OBJECTIVES

1. To assess and compare the pretest and post test level of knowledge, practice and bio physiological parameters of NCD's among the obese adolescents in experimental and control groups.
2. To determine the effectiveness of School Based Intervention on knowledge, practice and bio physiological parameters of NCD's of obese adolescents

3. To identify the relationship among the knowledge, practice and bio physiological parameters of NCD's in the pre and post test of experimental and control group.
4. To associate the mean differed knowledge, practice and bio physiological parameters of NCD's of obese adolescents in the experimental group with their selected demographic variables.

NULL HYPOTHESES

NH₁: There is no significant difference in the pre and post test level of knowledge, practice and bio physiological parameters of NCD's among the obese adolescents of experimental and control group at $p < 0.05$.

NH₂: There is no significant relationship among the knowledge, practice and bio physiological parameters of NCD's in the pre and post test of the experimental and control group at $p < 0.05$.

NH₃: There is no significant association of mean differed knowledge, practice and bio physiological parameters of NCD's of obese adolescents of the experimental group with their selected demographic variables at $p < 0.05$.

RESEARCH METHODOLOGY

A true experimental design was used for the study. The dependent variables were knowledge, practice and Bio physiological parameters of obese adolescence and the independent variable was School Based Intervention (information transfer, dietary and physical activity modification). The study was conducted at Sri Venkateshwara Matric Higher secondary schools Ayappakkam, Chennai. Simple random sampling technique was used. Screening tool was used to identify the obese children.

The data was collected by using Structured Questionnaire to assess the knowledge, Dietary practices by Food Frequency Questionnaire, (FFQ), assessment of missed meal, food items consumed in last week and dietary practices check list, physical activity practices by using checklist. Bio physiological parameters were assessed by blood investigation, height, weight WC and BP checking.

Content validity was obtained from the experts of Community Health Nursing, Community Medicine and dietician. The reliability of the tool was established by test retest method for knowledge($r=0.85$) and inter rater for practice($r=0.86$) and bio physiological variables($r=0.94$)

Pre test assessment of level of knowledge, dietary and physical activity practice and measurement of bio physiological parameters of NCD was done. School based intervention was provided for a period of six months. post test was done at two points in 3 and 6 months. follow up was done by monthly visits by investigators and daily monitoring by school teachers. The collected data was analysed using both descriptive and inferential statistics.

The investigator took measures to follow the ethical principles preceding the investigation. The investigator followed the principles of human rights, beneficence and Non-maleficence, dignity, confidentiality and justice.

MAJOR FINDINGS OF THE STUDY:

Regarding the knowledge of obese adolescents, between experimental and control group, In pretest there is no difference between study and control, but in Post-test-1($\chi^2=12.74$ $P=0.001$) and Posttest-II ($\chi^2=44.39$ $P=0.001$) there is a significant difference between study and control group. In the pretest none of them had adequate knowledge, in the post test I **9(12.16%)** had adequate knowledge and in post test II **17(22.97%)** had adequate knowledge which indicates the effectiveness of intervention

Level of knowledge		Group				Chi square test
		Study(n=74)		Control(n=15)		
		n	%	N	%	
Pretest	Inadequate	54	72.97%	13	86.67%	$\chi^2=1.25$ $P=0.26(NS)$
	Moderate	20	27.03%	2	13.33%	
	Adequate	0	0.00%	0	0.00%	
Posttest-I	Inadequate	23	31.08%	12	80.00%	$\chi^2=12.74$ $P=0.001^{***}(S)$
	Moderate	42	56.76%	3	20.00%	
	Adequate	9	12.16%	0	0.00%	
Posttest-II	Inadequate	4	5.41%	11	73.33%	$\chi^2=44.39$ $P=0.001^{***}(S)$
	Moderate	53	71.62%	4	26.67%	

	Adequate	17	22.97%	0	0.00%	
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Regarding the dietary habits of obese adolescents between experimental and control group, In pretest and post test I there is no difference between study and control, but in Posttest-II ($\chi^2=44.39$ $P=0.001$) there is a significant difference between study and control group. In the pretest only 16(21.62%) had good practice, in the post test I 39(52.70%) had good practice and in post test II 54(72.98%) had good dietary habits which indicates the effectiveness of intervention

Level of Dietary habits		Group				Chi square test
		Study(n=74)		Control(n=15)		
		n	%	n	%	
Pretest	Poor	0	0.00%	0	0.00%	$\chi^2=0.18$ P=0.67(NS)
	Moderate	58	78.38%	11	73.33%	
	Good	16	21.62%	4	26.67%	
Posttest-I	Poor	0	0.00%	0	0.00%	$\chi^2=3.38$ P=0.07(NS)
	Moderate	35	47.30%	11	73.33%	
	Good	39	52.70%	4	26.67%	
Posttest-II	Poor	0	0.00%	0	0.00%	$\chi^2=8.77$ P=0.01**(S)
	Moderate	20	27.02%	10	66.67%	
	Good	54	72.98%	5	33.33%	

Regarding the physical activity of obese adolescents between experimental and control group, In pretest and post test I there is no difference between study and control, but in Posttest-II ($\chi^2=8.96$ $P=0.01$) there is a significant difference between study and control group. In the pretest only 9(12.2%) had good physical activity practice, in the post test I 25(33.8%) had good physical activity practice and in post test II 46(62.2%) had good physical activity practice which indicates the effectiveness of intervention

Regarding the over all practice of obese adolescents between experimental and control group, In pretest and post test I there is no difference between study and control, but in Posttest-

II ($\chi^2=19.69$ $p=0.001$) there is a significant difference between study and control group. In the pretest only 12(16.22%) had good practice, in the post test I 38(**51.35%**) had good practice and in post test II 61(**82.43%**) had good practice which indicates the effectiveness of intervention.

Regarding the break fast missing Considering Study group, In the pretest only 50(67.57%) were never missing the break fast, in the post test I 55(**74.32%**) were never missing the break fast and in post test II 61(**82.43%**) were never missing the break fast which indicates that there is a significant difference between study group pretest and Post test-II and this difference is statistically significant. It means study group adults are reduced their Breakfast missing due to intervention. Considering Control group, In the pretest only 7(46.67%) were never missing the break fast, in the post test I & II 8(**53.34%**) were never missing the break fast which indicates that there is no significant difference between control group pretest and Post test-II and this is also not statistically significant

Regarding the meal missing of obese adolescents within experimental and control group, Considering Study group, In the pretest only 44(59.46%) were never missing the meal, in the post test I 49(**66.22%**) were never missing the meal and in post test II 54(**72.97%**) were never missing the meal which indicates that there is a significant difference between study group pretest and Post test-II and this difference is statistically significant($\chi^2=12.11$ $p=0.05$). It means study group adults are reduced their meal missing due to intervention. Considering Control group, In the pretest and post test I 8(53.33%) were never missing the meal, in post test II 9(**60.00%**) were never missing the meal which indicates that there is no significant difference between control group pretest and Post test-II

Regarding the food items consumed in last week among experimental group, that there is a reduction in , Tea, Coffee, White bread, puffs, parota, deep fried snacks, ice creams, noodles, Fried rice, packed snacks, meat, papads between pretest and posttest-II among experiment group of obese adolescents. More reduction in papads use was observed. Same way intake of healthy diets like green leafy vegetables, fruits, millets and wheat is improved.

Regarding the level of BMI, WC, FBS, TC,SBP AND DBP in experimental and control group there was no statistically significant difference was found in pre test and post test one. But in experimental group significant difference was found in post test 2.

Regarding the effectiveness of School Based Intervention

On knowledge, study group gained 23.8% whereas control group gained 4.7% score

		Maximum score	Mean ±SD	Post test-Pre week=Gain score with95%CI	% gain score with95%CI
Experiment	Pretest	20	7.41±1.69	4.75(4.03 - 5.47)	23.8% (20.2- 27.4)
	Posttest-I	20	10.19±3.21		
	Posttest-II	20	12.16±2.60		
Control	Pretest	20	7.47±1.60	0.93(-0.02 - 1.64)	4.7% (-0.1% - 8.2%)
	Posttest-I	20	8.00±1.56		
	Posttest-II	20	8.40±1.55		

On dietary habits, study group gained 15.0% whereas control group gained 2.1% score

		Maximum score	Mean ±SD	Posttest-Pre week=Gain score with95%CI	% gain score with95%CI
Experiment	Pretest	75	49.39±5.91	11.25(9.40 - 13.08)	15.0% (12.5- 17.4)
	Posttest-I	75	54.59±6.52		
	Posttest-II	75	60.64±6.53		
Control	Pretest	75	49.87±5.71	1.60(-0.02 - 2.64)	2.1% (-0.3% - 3.5%)
	Posttest-I	75	50.87±5.13		
	Posttest-II	75	51.47±4.70		

On physical activity practice score, experimental group gained 16.5% whereas control group gained 2.7% score.

On the bio physiological parameter, the statistically significant difference was found for DBP only. Though there was difference for other parameters it was not statistically significant.

	Bio physiological parameters						Mean Difference	t value
	Pre test		Post test-I		Post test-II			
	Mean	SD	Mean	SD	Mean	SD		

BMI	27.30	4.33	26.57	4.18	25.78	3.93	1.52	1.17
WC	83.74	7.41	82.59	7.07	80.11	7.51	3.63	1.76
FBS	87.20	7.34	86.51	7.71	83.31	7.52	3.89	1.90
TC	151.59	28.19	147.61	28.96	145.52	26.05	6.07	0.81
SBP	110.23	11.06	107.30	10.49	103.84	8.28	6.39	0.99
DBP	77.44	8.74	74.56	8.79	71.64	8.38	5.80	2.48*

Correlation between the knowledge gain score, practice gain score and bio physiological parameters reduction score of NCD's revealed that there was statistically significant relationship was found among all the variables in experimental group and not found for control group

Statistically significant association was found between the study variables knowledge, practice and bio physiological variables of obese adolescents with their selected demographic variables age, education, family income, family type and family size.

Elder children, more standard children and small family size children are gained more knowledge score than others

Elder children, more standard children and nuclear family children are gained more Dietary habit score than others

Elder children, more standard children and Nuclear family children are gained more physical activity score than others.

Elder children, more standard children and small family size children are reduced more BMI score than others

Elder children and nuclear family children are reduced more WC score than others.

Elder children and nuclear family children are reduced more FBS score than others.

Elder children and small family size children are reduced more TC score than others.

Elder children, more education, income family children are reduced more SBP score than others.

Elder children and small family size children are reduced more DBP score than others.

CONCLUSION

The school based intervention was effective in improving the knowledge, practice and reducing the bio physiological parameters. Though the reduction in bio physiological variables score is not statistically significant, there was tremendous change in their practice. The school is the best place to bring out changes in the diet as well as physical activity practice.

RECOMENDATIONS

The study finding shows that the school based intervention is an effective strategy to prevent and manage the NCD risk among the adolescents

1. The intervention package school based intervention can be utilised in the primary and secondary health care services settings of government as well as private.
2. The Village Health Nurses, Sector Health Nurses, Community Health Nurses and other health care professionals need to be trained on the components of school based intervention and training module can be devised by the NRHM for various categories of health care personnel.
3. A refresher course can be organised for all health care workers on recent trends of nutritional aspects and food exchange for obesity reduction and prevention by the clinical nutritionist.
4. The components of obesity screening like BMI, WC need to be an integral part of health assessment in all the primary, secondary and tertiary level of health care settings like the vital signs.

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