A pilot study to assess the Effectiveness of family based intervention on obesity parameter (BMI), stress and coping abilities among Obese Adolescents and among obese adolescents at selected settings

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Abstract- Background: World Obesity Federation released findings indicating that over one billion individuals globally are affected by obesity, comprising approximately 880 million adults and 159 million children and adolescents aged 5 to 19 years. An analysis conducted revealed that nearly 3 billion people are classified as either overweight or obese. This information implies that a significant portion of the global population resides in nations where the health risks associated with overweight and obesity surpass those linked to underweight. Aim of the study: To assess the obesity related problems among adolescents and To assess the Effectiveness of family based Interventions on obesity parameters, stress and coping abilities among obese adolescents in study and control group.

Subjects and methods: A quantitative method research approach using quasi - experimental nonequivalent control group design. Using purposive sampling, 20 samples fulfilling inclusion and exclusion criteria were selected as 10 for quantitative data collection for both groups. Data was collected using a structure knowledge questionnaire, stress perceived stress scale and coping ability self efficacy coping to assess knowledge, stress and coping respectively. Results: Based on quantitative data theme were derived. Based on experts suggestions, the family based intervention was designed and test for its effectiveness among obese adolescents. The comparison between the mean differed BMI, knowledge, stress and coping ability scores between the group revealed a high level of statically significance at p<0.001. a moderate positive correlation was observed between knowledge and coping ability. Thus indicating the family based intervention was effective in BMI and stress reduction among obese adolescents. Conclusion: The family based intervention has been found to significantly gaining knowledge and coping ability, whereas reduction of BMI and stress.

Keyword: family based intervention, BMI, knowledge stress coping abilities, obese adolescents

1. INTRODUCTION

Adolescence is the critical phase of life, is a period of major physical, physiological, psychological, and behavioural changes with changing patterns of social interactions and relationships.¹ Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19. It is a unique stage of human development and an important time for laying the foundations of good health. Adolescents experience rapid physical, cognitive and psychosocial growth. Adolescent leisure activities have been increasing toward information and communication technologies, such as phones, computers, and the Internet, and there are many risks that come with these new activities ²

1.1. BACKGROUND OF THE STUDY

Globally 1.2 billion (18%) of adolescents aged 10-19. 243 million (one quarter of Indian population) adolescents in India.12.4 million (17.2%) of Adolescents in Tamil nadu. A rapid increase of adolescent obesity is an upcoming national public health concern. Obese adolescents are at significant risk of becoming obese adults and its co-morbidities. In India around 2 billion adolescents overweight, of those 650 million are considered to be affected by obesity (BMI \geq 30 kg/M²). That equates to (39% of males and 40% of females). In Tamil Nadu, identified as overweight (4.58%) among boys and girls (9.24%) between the age group of 12 to 17 years. The worldwide prevalence of obesity parameters, anxiety and depression in adolescents is estimated to 6.5% and 2.6%, respectively and rates are increasing.

The rising prevalence of adolescent obesity is associated with a increase in co-morbidities and Up to three-fourth of children with overweight /obesity.⁵Similarly Pre-diabetes/diabetes was 12.3% and 8.4% among adolescent boys and girls in India. In addition, Vitamin D₃ deficiency, thyroid dysfunction, and dyslipidemia was found to be 79.4%, 62.8%, and 37.5%, respectively.

1.2. STATEMENT OF THE PROBLEM

A Quasi experimental study to assess the Effectiveness of family based intervention on obesity parameter (BMI), stress and coping abilities among Obese Adolescents and among obese adolescents at selected settings.

1.3. OBJETIVE

- 1. To screen the level of anthropometric among adolescent
- 2. To assess and compare the pretest and posttest level of obesity parameters and its related stress and coping abilities among experimental and control group.
- 3. To assess the Effectiveness of family based Interventions on obesity parameters and its related stress and coping abilities among adolescent.
- 4. To correlate the mean differed level of obesity parameters, stress and coping abilities among obese adolescents in the experimental and control group.
- 5. To associate the selected background variables with mean differed selected obesity parameters and its related stress and coping post test score in experimental and control group

2.RESEARCH METHODOLOGY

A quantitative method research approach using quasi - experimental nonequivalent control group design. Using purposive sampling, 20 samples fulfilling inclusion and exclusion criteria were selected as 10 for quantitative data collection for both groups. Data was collected using a structure knowledge questionnaire, stress perceived stress scale and coping ability self efficacy coping to assess knowledge, stress and coping respectively. After obtaining ethical clearance & formal permission and consent from the private schools and assent from obese adolescents the pilot study will be conducted for 20 obese adolescents (13 to 17 yrs). The pilot study also showed that the purposive sampling techniques based on the inclusion and exclusion criteria were appropriate for samples selections. The methods of administering the familybased intervention the proposed analytical measures were suitable for the study. At first both the experimental group and control group will be gathered in well-ventilated room and assess the screening and the pretest level of obesity parameter, stress and coping abilities. There was a positive moderate correlation which is significant between mean differed knowledge and coping abilities gaining and BMI stress reduction score in the study group. Whereas in the control and there was an insignificant poor correlation. After that the experimental group will be administered familybased intervention such as Family Counseling Diet planning Physical Activity and Exercise, Self-Monitoring, Reflective Journaling, Each technique for about 15 to 20 minutes, for 15 day and reinforcement of dairy maintenance with obese adolescents will be assessed by the investigator and the control group will follow the routine activities. After 1 week the investigator will assess the post test level of pretest level of obesity parameters, stress and coping abilities. and after 4th week,8th week and 12th week. investigator will assess the obesity parameters of obese adolescents



III. Data analysis

This chapter Deals with analysis and interpretation of the data collected from 30. adolescents students. The data was organised, tabulated and analysed according to the objectives. The findings are presented under the following topics

Table 1 : Frequency and percentage distribution of Demographic information of obese adolescents in Study and control group

		Group						
S.No	Demographic variables	Study (1	n=10)	Contr	Control (n=10)			
		Frequency	%	Frequency	%			
1	Age in years							
	a) 13-14	7	70.00%	9	90.00%			
	b) 15-16	3	30.00%	1	10.00%			
	c) 17 yr. & above	0	0.00%	0	0.00%			

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2	Gender of the adolescent				
	a) Male	4	40.00%	4	40.00%
	b) Female	6	60.00%	6	60.00%
3	Religion		0.00%		0.00%
	a) Christian	9	90.00%	9	90.00%
	b) Hindu	1	10.00%	1	10.00%
	c) Muslim	0	0.00%	0	0.00%
	d) Others (Specify)	9	90.00%	9	90.00%
4	Birth order of the obese adolescent				
	a) 1 st	6	60.00%	4	40.00%
	b) 2 nd	4	40.00%	6	60.00%
	c) 3 rd	0	0.00%	0	0.00%
	d) more than 3	0	0.00%	0	0.00%
5	Number of siblings				
	a) None	6	60.00%	5	50.00%
	b) 1	4	40.00%	5	50.00%
	c) 2	0	0.00%	0	0.00%
	d) More than 2	0	0.00%	0	0.00%
6	Educational Status of the obese adolescent				
	a) 7 ^{7h} standard	2	20.00%	2	20.00%
	b) 8 th standard	5	50.00%	7	70.00%
	c) 9 th standard	3	30.00%	1	10.00%

Table 2 : Frequency and percentage distribution of Family Background Variables of obese adolescents in Study and control group

S No	Family Paakground Variables	Group						
5.INO	Faining Background Variables	Frequency	%	Frequency	%			
1	Type of family							
	a) Joint family	9	90.00%	9	90.00%			
	b) Nuclear family	1	10.00%	1	10.00%			
	c) Extended family	0	0.00%	0	0.00%			
	d) Others	0	0.00%	0	0.00%			
2	Area of living as per family card							
	a) Rural	0	0.00%	0	0.00%			
	b) Urban	10	100.00%	10	100.00%			
	c) Semi- urban	0	0.00%	0	0.00%			
	d) others	0	0.00%	0	0.00%			
3	Parenting style							
	a) Democratic (Give freedom)	5	50.00%	4	40.00%			
	b) Authoritarian (strict)	4	40.00%	4	40.00%			
	c) Laizze fair (Carefree parenting)	1	10.00%	2	20.00%			
4	Family size including self							
	a) Small (2-4)	6	60.00%	5	50.00%			
	b) Medium (5-7)	2	20	3	30.00%			
	c) Large (> 7)	1	10.00%	2	20.00%			

Table 3 : Frequency and percentage distribution of Family Background Variables of obese adolescents in Study and control group (Mother father educational status)

1	Mother educational status				
	a) Non literate		50.00%	5	50.00%
	b) Primary school		20.00%	2	20.00%
	c) Middle school	3	30.00%	3	30.00%

	d) High school	0	0.00%	0	0.00%
	e) Higher secondary or post high school diploma	0	0.00%	0	0.00%
	f) Graduate or post graduate	0	0.00%	0	0.00%
	g) Professional and others	5	50.00%	5	50.00%
2	Father educational status				
	a) Non literate	0	0.00%	0	0.00%
	b) Primary school	0	0.00%	0	0.00%
	c) Middle school	0	0.00%	0	0.00%
	d) High school	0	0.00%	0	0.00%
	e) Higher secondary or post high school diploma	5	50.00%	4	40.00%
	f) Graduate or post graduate	4	40.00%	4	40.00%
	g) Professional and others	1	10.00%	2	20.00%
3	Total household Income per month				
	a) Rs.10000 - Rs.15,000/-	0	0.00%	0	0.00%
	b) Rs.16001-Rs.20,000/-	0	0.00%	0	0.00%
	c) Rs.20,001-Rs.30,000/-	2	20.00%	3	30.00%
	d) Rs.31,001-Rs.40,000/-	4	40.00%	2	20.00%
	e) Rs.41001 & above	4	40.00%	5	50
4	Chronicity of the obesity				
	a) 0-1 years	0	0.00%	0	0.00%
	b) 2-3 years	6	60.00%	7	70.00%
	c) 4-5 years	4	40.00%	3	30.00%
	d) >5 years	0	0.00%	0	0.00%
5	Family History of obesity				
	a) Yes	4	40.00%	3	30.00%
	b) No	6	60.00%	7	70.00%

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Table 3 : Frequency and percentage distribution of Family Background Variables of obese adolescents in Study and control group (Mother father occupational status)

1					
	a) Daily wages	0	0.00%	0	0.00%
	b) Professional	0	0.00%	0	0.00%
	c) Non-Professional	0	0.00%	0	0.00%
	d) Business	2	20.00%	1	10
	e) Unemployed	3	30.00%	4	40.00%
	f) Homemaker	5	60.00%	5	60.00%
2	Father Occupational status				
	a) Daily wages	0	0.00%	0	0.00%
	b) Professional	1	10.00%	2	20.00%
	c) Non-Professional	2	20.00%	2	20.00%
	d) Business	7	70.00%	6	60
	e) Unemployed	0	0.00%	0	0.00%
	f) Homemaker	0	0.00%	0	0.00%

Table 4: Frequency and percentage distribution of Diet related variable related variable of obese adolescents in Study and control group

S.No	D' = 1 + 1 + 11	Experimental g	roup	Control group	Control group		
	Diet related variable	Frequency	%	Frequency	%		
1	Type of food						
	a) Vegetarian	7	70.00%	9	90.00%		
	b) Non Vegetarian	3	30.00%	1	10.00%		
2	Liking food						

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	a) Jung food	4	40	3	30
	b) Home food	1	10	1	10
	c) Fast food	5	50	6	60
	d) Others	0	0	0	0
3	Food prepared and consumed by		0		0
	a) Home	10	100	10	100
	b) Hotels	0	0	0	0
	c) Others	0	0	0	0

Table 5 : Frequency and percentage distribution of Physical activity related variable of obese adolescents in Study and control group

C Ma	District and starting the starting starting the starting	Stud	dy group	Control group		
5.110	Physical activity related variable	Frequency	%	Frequency	%	
1	Habit of exercise					
	a) Yes	2	20	3	30	
	b) No	8	80	7	70	
2	If Yes Type of exercise					
	a) Walking	0	0	0	0	
	b) Jogging	2	100	2	67	
	c) Bicycling	0	0	1	33	
	d) Skipping	0	0	0	0	
3	Duration of exercise in each frequency					
	a) < 15 minutes	2	100	3	100	
	b) 16-30 minutes	0	0	0	0	
	c) 31-60 minutes	0	0	0	0	
2	Distance in km from home to schools					
	a) 1 to 5km	60.00%	5	50.00%	60.00%	
	b) 6 to 10 km	20.00%	1	10.00%	20.00%	
	c) 11 to15 km	20.00%	4	40.00%	20.00%	
	d) > 16 km	0.00%	0	0.00%	0.00%	
3	Way of commuting to school					
	a) By Walk	1	10.00%	0	0.00%	
	b) By Cycle	4	40.00%	4	40.00%	
	c) By Public Transport	4	40.00%	5	50.00%	
	d) By Private Transport	1	10.00%	1	10.00%	





Table 1		Comparison	of	obesity	narameter ((BMI)	١
1 abic 1	•	Comparison	01	obesity	parameter		,

	Pre-	test	Postte	st-I	Postte	st-II		Posttest-III		Mean difference	Oneway Repeated measures ANOVA F-test
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
BMI	26.42	1.44	25.57	.93	25.30	1.16	25.24		11.1	1.18	F=2.73p=0.05* (S)

Table 2: Comparison of mean knowledge of obesity during Pretest, Post test-I, Post test-II and Post test-III among Study group & control group

	T 1 C	Group					
	Level of Knowledge	Experiment	Experiment			— Oneway Repeated	
		n	%	n	%	ineasures ANOVA P-test	
D ()	Inadequate	4	40.00%	3	30.00%		
	Moderate	6	60.00%	7	70.00%	χ2=0.22p=0.64	
Pre-lesi	Adequate	0	0.00%	0	0.00%	DF=1(NS)	
	Total	10	100.00%	10	100.00%		
	Inadequate	0	0.00%	2	20.00%	0 0 00 0 0 1 **	
Deat test	Moderate	4	40.00%	8	80.00%	$\chi^{2=9.33p=0.01**}$	
Post-test	Adequate	6	60.00%	0	0.00%	DF = 2(5)	
	Total	10	100.00%	10	100.00%		

Table 3: Comparison of mean stress during Pretest,	Post test-I,	Post test-II a	nd Post test-III	among Study	group
& control group					

			G	Oneway Repeated			
	Level of stress		Study (10)		Control (10)		
		n	%	n	%	incasures ANOVA P-test	
Pre- test	No Stress	0	0.00%	3	30.00%		
	Low Perceived Stress	0	0.00%	7	70.00%		
	Moderate Perceived Stress	4	40.00%	0	0.00%	$\chi^2=0.22p=0.64$	
	High Perceived Stress	6	60.00%	0	0.00%	DI = I(IVS)	
	Total	10	100.00%	10	100.00%		
Post- test	No Stress	0	0.00%	2	20.00%	$\chi^{2=9.33p=0.01**}_{DE=2(S)}$	
	Low Perceived Stress	4	40.00%	8	80.00%		
	Moderate Perceived Stress	6	60.00%	0	0.00%	$D1^{-2}(3)$	
	High Perceived Stress	0	0.00%	0	0.00%		

	Total	10	100.00%	10	100.00%		
T	Table 4: Comparison of mean C	oping abili	ties during Pr	retest, Pos	st test-I, Post test-	II and Post test-III amon	ıg
S	Study group & control group						

		Group					
	Level of coping abilities	Study (10)		Control (10)		Oneway Repeated	
	n	%	n	%	measures ANOVA F-test		
Pre-test	No coping ability	0	0.00%	4	40.00%		
	low level coping ability	4	40.00%	2	20.00%		
	Moderate level coping ability	6	60.00%	4	40.00%	χ2=0.22p=0.64 DF=1(NS)	
	High level coping ability	0	0.00%	0	0.00%		
	Total	10	100.00%	10	100.00%		
Post-test	No coping ability	0	0.00%	4	40.00%	χ2=9.33p=0.01**	
	low level coping ability	0	0.00%	6	60.00%		
	Moderate level coping ability	4	40.00%	0	0.00%		
	High level coping ability	6	60.00%	0	0.00%	DF=2(S)	
	Total	10	100.00%	10	100.00%		

Table 5 : Correlation between mean BMI, knowledge of obesity, stress and Coping abilities among Study group & control group

Correlation between	Mean gain score Mean±SD	Karl pearson Correlation coefficients	Interpretation
Knowledge gain score Vs	23.00±2.00	r= 0.45	significant positive moderate correlation
coping gain score	31.17±3.13	P=0.001*** (S)	
Coping gain score Vs	23.00±2.00	r= 0.42	significant positive moderate correlation
Stress reduction score	31.17±3.13	P=0.001*** (S)	
Coping gain score Vs	23.00±2.00	r= 0.33	significant positive moderate correlation
BMI reduction score	31.17±3.13	P=0.01**(S)	
Knowledge gain score Vs	23.00±2.00	r= 0.38	significant positive fair correlation
stress reduction score	31.17±3.13	P=0.01** (S)	
Knowledge gain score Vs	23.00±2.00	r= 0.37	significant positive fair correlation
BMI reduction score	31.17±3.13	P=0.01**(S)	
Stress reduction score Vs	23.00±2.00	r= 0.28	significant positive fair correlation
BMI reduction score	31.17±3.13	P=0.05*(s)	

MAJOR FINDINGS OF THE PILOT STUDY REPORT WERE

- Comparison of Pre-test, Post test level of BMI score in study group revealed that 32.00% were obese and control group revealed that 28.00%
- Comparison of pre and post-test level of knowledge score among obese adolescents inferred that obese adolescents in the study group had gained 9.33% of knowledge whereas in the control group the gain was only 0.64 %.
- Comparison of pre and post-test level of stress score among obese adolescents inferred that obese adolescents in the study group had 0.64% moderate Perceived Stress score whereas in the control group the gain was only 9.33%..
- Comparison of pre and post-test level of coping abilities score among obese adolescents inferred that obese adolescents in the study group had

9.33 % and High level coping ability whereas in the control group the gain was only 0.06%.

• There was a positive moderate correlation which is significant between mean differed knowledge and coping abilities gaining and BMI stress reduction score in the study group. Whereas in the control and there was an insignificant poor correlation.

The pilot study also showed that the purposive sampling techniques based on the inclusion and exclusion criteria were appropriate for samples selections. The methods of administering the family based intervention the proposed analytical measures were suitable for the study.

CONCLUSION

The main aim of the pilot study was to identify the reliability of the tool and feasibility of the study. The pilot study revealed the tool was reliable, practicable and feasible to carry on with the adolescents and their family members with of obesity. The result of the pilot study revealed that there is significant difference in the pre-test and post test score of level of obesity parameter

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