Asian Journal of Scientific Research

ISSN 1992-1454

science alert
http://www.scialert.net

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an open access publisher
http://ansinet.com

Asian Journal of Scientific Research 7 (2): 176-187, 2014
ISSN 1992-1454 / DOI: 10.3923/ajsr.2014.176.187

Interventions to Combat Obesity among School Children at Madurai, Tamilnadu

[1]G.G. Kavitha Shree and [2]S. Parvathi
[1]Department of Food Science and Nutrition, Home Science College and Research Institute, Tamil Nadu Agricultural University, Madurai-625 104, India
[2]Department of Home Science Extension, Home Science College and Research Institute, Tamil Nadu Agricultural University, Madurai-625 104, India

Corresponding Author: G.G. Kavitha, Department of Food Science and Nutrition, Home Science College and Research Institute, Tamil Nadu Agricultural University, Madurai-625 104, India

ABSTRACT

In this study the prevalence of overweight was 84% and obesity was 16% in the selected children and significantly higher in girls when compared to boys. There was a significant relation between Body Mass Index (BMI) of the children and BMI of their mothers. Majority of the children belonged to higher socio economic group and there was significant relationship between socio economic status and the BMI of children. There was a significant and positive relationship between Body Mass Index, Waist Hip Ratio and Waist circumference in the selected children. It was found that 1% increase in waist hip ratio would contribute 34.6% of BMI in children and 1 cm increase in waist circumference would increase 0.1% BMI in children. Ninety percent of the children were non-vegetarians. Majority of the children preferred to take food outside. Children preferred to take foods in fast food restaurants and foods on wheel. Eighty five percent of the children were taking snacks, 68% were consuming beverages and ice creams and 69% of the children were taking bakery while eating out. Eighty percent of the children preferred snacks advertised through Medias. Majority of the children were taking snacks while watching television. Majority of the children were spending 4-5 h in watching television, computers and playing video games. Eighty percent of the children were not doing any exercises. There was a significant gain in knowledge and significant retention ('t'-2.76) in children and their parents after exposure of education programme through the developed compact disc.

Key words: Childhood obesity, school, causative factors, Madurai, Tamil Nadu, India

INTRODUCTION

Obesity, a global nutrition concern is confined not only to adults but also to the children and adolescents, which cause major health consequences become pandemic. Traditionally a fat child is considered as an active and healthy child but the adverse and serious consequences of childhood obesity are now proved. The prevalence rate of overweight and obesity in India are 12.8 and 10.3%, respectively and about 30% of obesity begins in childhood (Bhave *et al*., 2004). In South India, the rate of overweight and obesity was 16.80 and 3.10%, respectively in school children in the age group 4-18 years (Kaur *et al*., 2005).

Fifty to Eighty percent of obese children become obese adults and complications of adult obesity are made worse due to childhood obesity. Obese children faces personality problems like lack of

sociality, low self esteem, low self confidence, lack of initiative, lack of leadership, low threshold, high frustration, tolerance, introverted, dependency and heightened emotionality. The increasing prevalence of pediatric obesity and the associated consequences has created a need for effective interventions. Such studies though have been done all over India, it is not at all done at Madurai, Tamil Nadu, India, because childhood obesity is more prevalent here for the past five years which is growing rapidly too in this selected area. School based interventions provides an awareness to enhance the health and well being of our future citizens, because the message taught in schools help to reach almost all children. Health and nutrition education through multimedia programmes helps to capture the attention, increase knowledge and to bring changes in the behavior of the children. Childhood obesity related issues though prevalent in cities like Madurai, Tamil Nadu, India, there are no studies to either assess the causative factors nor to take steps through interventions to overcome this serious issue. Against this background, the present investigation was undertaken with a two-dimensional approach to assess the health and nutritional status of overweight and obese school children of Madurai district and to study the effectiveness of the transmitted messages through Compact Disc to overweight and obese children and their mothers.

RESEARCH METHODOLOGY

The study was conducted in a Matriculation Higher Secondary School, Madurai District of Tamil Nadu. School children in the age group of 10 to 15 years were considered for the study. Children in this age group will have better understanding and attentiveness. According to census 2001, in India child population in the age group of 10 to 15 years was about 9.6% and they are the future adults of our country. So imparting healthy eating and life style behavior in this age group will help to prevent obesity and nutrition related chronic diseases. In the selected school, totally 150 children studying 7th, 8th and 9th standard in the age group of 10-15 years were selected for the study purpose. Among the 150 children, 46 were girls and 104 were boys.

Assessment of anthropometric measurements: Anthropometric measurements like height, weight, Body Mass Index (BMI) and Waist to Hip Ratio (WHR) were taken to all the selected 150 children. The Body Mass Index (BMI) is the most commonly used criteria to diagnose obesity. The BMI is a simple, accurate and valid measure of fatness in children and adolescents. It can be calculated using the formula:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$$

The International Obesity Task Force (IOTF) has endorsed age and sex specific BMI cut off points for identifying childhood overweight and obesity (Cole *et al.*, 2000). In this study, IOTF standard was used to classify the subjects as overweight and obesity. Using BMI, with IOTF standard ranges the selected children were categorized as underweight, normal, overweight and obese. To assess the family history of obesity in children, the height and weight of the parents were also recorded by face to face contact. This method is considered as reliable method in adults. BMI of parents was calculated and grouped based on the classification suggested by WHO (2003).

Waist-Hip Ratio is the widely accepted form of fat patterning measurement. The Waist-Hip Ratio was calculated using the formula:

$$\text{WHR} = \frac{\text{Waist circumference (cm)}}{\text{Hip circumference (cm)}}$$

A Waist-Hip Ratio of 1.0 or greater in males and 0.85 or greater in females is an accepted clinical method for identifying subjects with abdominal fat accumulation (Bhave *et al*., 2004).

After assessing the anthropometric measurements amongst the 150 children, Seventy five children (n = 75) were found to be obese/overweight. Thus for the second phase of the study only 75 children were considered to have in-depth in the study of combating obesity in children.

Experimental design: A detailed interview schedule was developed to collect the background information from the selected children. For perfection, the framed schedule was sent to forty judges for their responses along with a requisition. The judges comprised of Professors in the Department of Agricultural Extension and Food Science and Nutrition from Annamalai University State Agricultural Universities of Coimbatore, Kerala, Bangalore and Madurai, Physiotherapists, Dieticians and Medical Officers from Madurai and Chennai.

Based on their responses and suggestions the interview schedule was perfected for improvised responses from children to fulfill the objectives of the study. For the effective collection of data and to avoid ambiguity, a pilot study was conducted with 50 children in the same age group (10-15 years) in the non study area and again remodified. Computer based multi-media increases the possibilities of school based health and nutrition education (Kreisel, 2004).

Hence, in this study an educational Compact Disc entitled "Obesity is now globesity" duration of 25 min was developed with the help of Computer Software Engineers, Film Technologists, Professional Photographers and Animation specialties to give health and nutrition education program to 75 children and their parents. The existing knowledge level of the selected children and their mothers on health and nutritional aspects was measured by providing multiple choice questions. The content of Compact Disc included baseline knowledge on obesity sensible snacking, moderate consumption of sweetened beverages, avoiding salty foods, avoiding unsafe dieting practices, avoiding skipping meals and encouraging physical activity.

RESULTS AND DISCUSSION

Anthropometric status of the target group: Among 150 children who were initially culled out to screen the obese/overweight children, only 70 children (50% of the children) were selected for further research in this study. The remaining 75 normal weight and underweight children omitted to make the study in-depth and also to study the impact of the interventions only in our target group. The prevalence rate of overweight and obesity in children were 84 and 16%, respectively from the total of 150 children. It could be seen that 35.6% of the boys and 56.5% of the girls were overweight. Also it can be seen that 6.7% of the boys and 10.9% of the girls were obese.

The findings indicated that the prevalence of overweight and obesity was significantly ('t'-5.366) higher in girls when compared to boys as seen in Table 1. The findings are in conformation with the study of McMaster *et al*. (2005) who revealed that the prevalence of obesity was higher in girls than in boys.

Table 1: Prevalence of overweight and obesity among selected children

	Boys		Girls		Total	
Variable	No.	%	No.	%	No.	%
Over weight	37	35.6	26	56.5	63	84.0
Obesity	7	6.7	5	10.9	12	16.0

Table 2: BMI values of the parents of the selected children

	Father's BMI		Mother's BMI	
Name of the category	No.	%	No.	%
Normal weight	20	26.6	4	5.3
Overweight	41	54.7	46	61.3
Obesity	14	18.7	25	33.3

Table 3: Relationship between body mass index, waist hip ratio and waist circumference in the selected children (n = 75)

Variable	Coefficient	Standard error
Body mass index	19.37	15.46
Waist hip ratio	34.60*	16.29
Waist circumference	0.10**	0.03

**Significant at 0.01 level, * Significant at 0.05 level

It was found that 32% of the overweight children had overweight fathers and 36% of the overweight children had obese fathers (Table 2). It was also observed that 2.7% of the obese children had overweight fathers and 13.3% of the obese children had obese fathers. From the study, it was found that 10.7% of the overweight children had overweight mothers and 73.3% of the overweight children had obese mothers. It was noticed that all 12 obese children had obese mothers. The present study reveals that higher proportion of fathers and mothers of the selected children were overweight and obese which may be one of the causative factors for obesity in children. It was observed that the BMI of the children had high positive significance at 1% level with BMI of their mothers. The above result reveals that there was a significant relation between BMI of the children and BMI of their mothers. The findings are in conformity with Jabre *et al.* (2005) who showed a significant association between overweight children and overweight mothers.

Relationship between body mass index, waist hip ratio and waist circumference in the selected children: It was observed that the correlation between the BMI of children and waist hip ratio was highly significantly at 1% level (0.34). The body mass index of the children was highly positive and significantly correlated (0.44) with waist circumference of the children as shown in Table 3. The above results indicate that there is a strong relationship between body mass index, waist hip ratio and waist circumference of the selected overweight and obese children. The regression coefficients results indicated that there was a functional form of relationship between body mass index with waist hip ratio and waist circumference. The results revealed that 1% increase in waist hip ratio would contribute to 34.6% BMI in children and 1 cm increase in waist circumference would increase 0.11% of BMI in children.

Socio economic profile of the selected overweight and obese children: In any field of study a clear understanding of the socio economic characteristics of the respondents enables the

Table 4: Socio economic profile of the selected overweight and obese children

Name of the variable	Category	No.	%
Age	10-11	4	5.3
	12-13	41	54.7
	14-15	30	40.0
Sex	Male	44	58.7
	Female	31	41.3
Birth order	1	53	70.7
	2	13	17.3
	3	7	9.3
	>3	2	2.7
Percentage of marks	<50	28	37.3
	51-70	25	33.3
	71-80	7	9.3
	>80	15	20.1
Fathers education	Illiterate	3	4.0
	Primary school	1	1.3
	Middle school	1	1.3
	High school	11	14.7
	Secondary	1	1.4
	Collegiate	58	77.3
Mother's education	Illiterate	18	24.0
	Primary school	10	13.3
	Middle school	7	9.3
	High school	6	8.0
	Secondary	2	2.7
	Collegiate	32	42.7
Family income	Low (<10,000)	5	6.7
	Medium (10,000-30,000)	7	9.3
	High (>30,000)	63	84.0
Family type	Nuclear	46	61.3
	Joint	29	38.7
Number children	1	39	52.0
	2	20	26.7
	3	14	18.7
	>3	2	2.6

investigator to interpret the data gathered (Table 4). It was found that 70.7% were the first child in their family. About 37.3% of the children obtained below 50% of marks. Major proportion of the children belonged to high income group (Rs>30,000). It was found that about 52% of the children were the only child in their family.

It was found that 61.3% of the children were from nuclear type family. It was found that both mothers and fathers of the selected children were educated up to college level leading to better education, better jobs and ultimately higher income. The results of the study by Singh *et al.* (2003) among Delhi school children in the age group of 10-16 years indicated that there was an increase in prevalence of obesity in higher income group.

It was also observed that most of the children were from the nuclear family and they are the only child in their family. So, it is quite natural that parents give more attention to the children which may be one of the contributing factors for overweight and obesity among the selected children. In similar, Goswami (1992) reported that parents and grandparents wrong food choices to express their love as a reward which is one of the causative factors for obesity in children.

Table 5: Relationship between initial BMI and background of the selected children

	BMI			
	Overweight category (I)		Obese category (II)	
Particulars	Mean	SD	Mean	SD
Gender of children				
Boys	21.63	3.96	22.08	3.6
Girls	21.57	3.88	21.69	3.2
'p' value	0.7583 (NS)	-	0.1205 (NS)	-
Educational status of the parents				
Father				
No formal education	18.71	0.65	22.0	3.5
School	18.77	2.03	22.36	4.5
Graduate	21.75	3.93	21.49	3.3
Post-graduates	21.44	4.08	23.31	3.4
'p' value	0.0356*	-	0.0003*	-
Mother				
No formal education	24.8	-	20.27	4.3
School	19.6	1.9	23.33	3.55
Graduate	21.6	3.9	21.76	3.51
Post-graduates	21.6	3.8	22.55	3.15
'p' value	0.4399 (NS)	-	0.0461*	-
Economic status (Rao, N,1973)				
Lower middle	21.89	3.94	21.01	2.76
Middle	20.44	3.1	21.98	3.54
Upper middle	22.12	4.23	22.11	3.5
Elite	22.14	4.03	21.66	3.54
'p' value	0.0716 (NS)	-	0.05109 (NS)	-

**Highly Significant, *Significant, NS: Not significant

Relationship between initial BMI and educational and socio-economic background of the selected children: Background information obtained from the selected children was related with the initial BMI of children which is depicted in Table 5.

It was observed that gender of the children had no significant impact on the BMI of both Category I ($p = 0.7583$) and Category II ($p = 0.1205$). It was understood that there was no difference between genders on the prevalence of overweight/obesity initially among the selected children. The data revealed that higher education of the fathers had significant impact on the increased BMI initially among the Category I ($p = 0.0356$) and Category II children ($p = 0.0003$). The higher education status of mothers among the Group-I had no significant impact on the BMI of their children ($p = 0.4399$). However, mothers of the Category II children had significant influence on child's BMI with the higher education ($p = 0.461$).

The prevalence of BMI had gradual increase from lower middle class to elite group among Category I children. It was observed that lower middle class children had mean BMI of 21.89, middle class (20.44), upper middle (22.12) and elite group (22.14). It was clear that when the parents' education of the Category I was better there was a natural increase in their income status due to better jobs.

Category II children also showed higher mean BMI prevalence in lower middle class (21.01), middle class (21.98), upper middle class (22.11) and elite group (21.66). However, the results

showed no significant impact of economic status (from lower to upper middle classes) on the initial BMI of children in both Category I ($p = 0.0716$) and Category II ($p = 0.5109$). Thus, it can be concluded that with higher the socio-economic status the prevalence of obesity/overweight among children increased though there was no significant influence.

Eating habits of the selected overweight and obese children: The eating habits of the selected overweight and obese children were obtained. It was clear that 88% of the children were non-vegetarians which might be one of the causative factors for weight gain among children in this study (Table 6). The findings are in conformation with Newby *et al.* (2005) who reported that the risk of overweight or obesity was significantly higher among non-vegetarians.

Table 6: Eating habits of the selected overweight and obese children (n = 75)

Particulars	No.	%
Vegetarian		
Vegetarian	9	12.0
Non-vegetarian	66	88.0
Time of skipping meals		
Breakfast	36	48.0
Lunch	1	1.3
Dinner	-	-
Frequency of skipping meals		
Every day	30	40.0
Often	-	-
Rarely	7	9.3
Reason for skipping meals *		
Lack of time	11	14.7
Habit	12	16.0
Weight control	9	12.0
Lack of appetite	5	6.6
Reasons for not skipping meals*		
To fulfill hungry	19	25.3
Good for health	-	-
Habit	10	13.3
Compulsion by the parents	12	16.0
Reason for eating out *		
Food is appetizing	-	-
Fun	-	-
Variety	62	82.7
Necessity of the parents	51	68.0
Refreshment	31	41.3
Frequency of eating out		
Daily	44	58.7
Weekly	28	37.3
Fortnightly	-	-
Monthly	-	-
Occasionally	-	-
Frequently	-	-
Preferred place to eat out *		
Fast food restaurants	71	94.7

Table 6: Continue

Particulars	No.	%
Roadside hotels	10	13.3
Foods on wheel	59	78.6
Coffee/teashop	-	-
Type of foods eaten out*		
Snack foods	64	85.3
Beverages and ice creams	51	68.0
Bakery items	52	69.3
Hot and spicy foods	-	-
Eating habit		
Dining with family	18	24.0
Dining while watching TV	57	76.0
Dining when talking or reading	-	-
Dining alone	-	-
Food intake		
Less than normal	-	-
Normal	63	84.0
Eating more than normal	12	16.0
Poor eater	-	-
Reason to eat more		
Because parents	37	49.3
Because family members	19	25.3
Tendency to eat more		
Happy	65	86.7
Unhappy	10	13.3
Bored	-	-

*Multiple responses

It was observed that 48% the children were skipping breakfast. Similarly, WHO (1997) that skipping breakfast may lead to over consumption later resulting in obesity. From the study it was noted 94.7% of the children preferred eating out and only 5.3% of the children liked to take food at home. Majority of the children (82.7%) preferred eating out because of the availability of varieties of foods, about 68% of the children reported that parents were unable to provide food to their children due to lack of time and only 41.3% were taking foods outside for refreshment. Majority of the children (90.7%) informed that they took food outside with the permission of their parents and only 9.3% of the children ate food outside without the knowledge of their parents. It was observed that children preferred to eat in fast food restaurants (94.7%), 13.3% of the children liked to have foods from road side hotels and 78.6% of the children preferred to take foods that are sold in wheels (78.6%). Further it was noticed that 85.3% of the children preferred to have snack foods, 68% of the children preferred softened beverages and 69.3% of the children preferred bakery items while eating out.

From the collected data it was found that 76% of the children had the habit of dining while watching television and only 24% of the children had the habit of dining with family members. Styne (2005) conducted a study among teenagers and showed a significant relation between BMI and time spent in television viewing. It was also found that 49.3% children were forced by their parents to eat more than required and 25.3% of children were forced to eat by their family members (grand mothers, grand fathers etc.,). The findings are in conformation with Goswami (1992) who

reported that children are constantly and regularly overfed by their mothers and grandparents to express their love which is one of the causative factors for obesity in children. From the data, it can be concluded that skipping breakfast frequently, consumption of more food while watching television due to the distractions and unhealthy eating habits might be the major contributing factors for overweight and obesity in children.

Snacking pattern of the selected overweight and obese children: All the selected children liked to take snacks (100%). It can be observed from Table 7. That among the selected children 67% of them were taking snacks once in a day (6.7%), 60% of the children were taking snacks twice in a day, 33.3% of the children were taking snacks more frequently in a day. WHO (1997) reported that regular snacking particularly high fat foods leads to obesity among school children.

Table 7: Snacking pattern of the selected overweight and obese children (n = 75)

Particulars	No.	%
Frequency in snacking		
Once in a day	5	6.7
Twice a day	45	60.0
Weekly	-	-
Occasionally	-	-
More frequently in a day	25	33.3
Type of snacks preferred *		
Tasty	56	74.6
Nutritious	-	-
Hygiene	-	-
Attractive	-	-
Suggested by their friends	52	69.3
Advertisements	62	82.6
Costly and cheaper	-	-
Money spent in buying snacks		
Rs. 10-20	25	32.3
Rs. 20-30	35	46.7
Rs. 30-40	10	13.3
Rs. 40-50	-	-
Rs. 50-100	-	-
Rs. >100	-	-
Feel to snack *		
When bored	22	29.3
While watching TV	67	89.3
Pass time	22	29.3
While studying	-	-
When hungry	-	-
In between meals	6	8.0
Type of snacks to school *		
Fried foods	50	66.7
Bakery products	44	58.7
Sweets	34	45.3
Fast foods	51	68.0
Beverages	29	38.6
Raw vegetables and fruits	-	-

*Multiple responses

It was found that 74.6% of the children preferred tasty snacks, 69.3% of the children were taking snacks suggested by their friends and 82.6% of the children preferred to take snacks based on the advertisements through medias. It was found that 93.3% of the children reported that parents gave pocket money to buy snacks. It is clear from the table that majority of the children (89.3%) were taking snacks while watching television, 29.3% of the children preferred snacking when they were bored, 29.3% of the children were taking snacks as a pass time and only 8% of the children preferred snacking in between their meals. It was found that 97.3% of the children bought snacks to school. It was also observed that majority of the children were taking high fat foods regularly. It is clear that majority of the children were taking snacks while watching television which may be a contributing factor of obesity.

It was found that 89.3% of the children were consuming fast food items daily and only 10.7% of the children were consuming fast food items once in a week. Also it was found that about 56% of the children were consuming sweetened beverages daily. It was found that only 13.3% of the children were consuming raw vegetables and fruits daily. It was observed that major proportion of the children (53.3%) was consuming fruits and vegetables very rarely. So, it can be concluded that frequent consumption of high energy, high fat foods and less consumption of fiber rich foods may lead to overweight and obesity in children.

Physical activities of the selected overweight and obese children: It was found that about 66.7% of the children preferred to play indoor games and only 9.3% of the children had interest in outdoor games. It was also found that 65.4% of the children were playing only in schools, 9.3% of the children were playing only in home and only 25.3% of the children were playing both at school and home. About 85.3% of the children reported that they were not having time for playing.

It was found that higher proportion of the children (66.7%) spent only less than half an hour for play per day, 29.3% of the children were able to spend 1-2 h for play activities daily and only 4% of the children were spending 3-4 h for play activities per day. majority of the children (84%) reported that they were not having sufficient place to play in home. Also majority of the children (80%) reported that they were not allowed to play by their parents and only 20% of the children informed that parents were allowing to play. The findings are in conformity with the study done by James (1995) who revealed that children have difficulty in playing on local streets because of urban residence resulting in childhood obesity.

It was found that about 50.7% of the children were spending 2 to 3 h and 49.3% of the children were spending 4 to 5 h in watching television, computers and in playing video games. It was found that higher proportion of the children (85.3%) were going to school by vehicles, 6.7% of the children reached school by riding bicycle and 8% of the children were going to school by walk. It confirms with the results of De Onis (2004) who reported that increase in the amount of time spent on watching television with multiple TV channels, playing sedentary games and a decrease in the opportunities for physical activity on the way to school, at school will lead to childhood overweight and obesity.

It can be observed from the table that higher proportion of the selected children (84%) was admitted in tuition classes. In conformity with the present study, Bhave *et al.* (2004) revealed that the increase in childhood obesity is due to increased sedentary pursuits in which flourishing tuition classes is one among the sedentary activities where children are forced to use their playtime for additional studies.

Table 8: Knowledge levels of the target group

Details	Difference mean	SD	t-value	SE
Knowledge test versus knowledge gain in the selected children	7.933	1.106	62.070**	0.127
Knowledge gain versus knowledge retention in the selected children	0.413	0.495	7.221**	5.724
Knowledge test versus knowledge gain in mothers	5.893	2.037	25.052**	0.235
Knowledge gain versus knowledge retention in mothers	0.186	0.585	2.760**	6.763

SD: Standard deviation, SE: Standard error

It was found that majority of the children (81.3%) were not doing exercise daily only 9.3% of the children were doing exercises like walking and jogging, 6.7% of the children were going in bicycle to school and 2.7% of the children were doing exercises like yogasanas daily. This shows that only very few children were doing moderate to vigorous exercises regularly. The present study shows that children spent very less time in exercising. It can be found that majority of the children were watching television and playing sedentary games more than three hours a day. This may be due to unsafe roads, flat houses and urbanization. Thus children had less physical activities. It was found that children were forced to study in their play time resulting in reduced physical activities. It was noted that most of the children traveled by vehicles like school bus, bikes and cars to schools. These factors led to increased sedentary pursuits in children which may be the reasons for obesity in children. It could be concluded that the selected overweight and obese children had better socio-economic background, unhealthy eating habits, frequent snacking, decreased physical activities and increased sedentary behaviors which may be the major causative factors of overweight and obesity in the selected children.

Knowledge levels of the selected children and their mothers before and after the exposure to educational programmes: The paired 't' test was conducted to assess the knowledge levels of children before and after the exposure to educational programme. The results indicate (Table 8) that the difference means (7.93) of knowledge test and knowledge gain would be highly significantly ('t' value-62.07). The results revealed that children had significant gain in knowledge after the exposure to the educational programme. The result indicated that the difference of means (0.413) of knowledge gained by the children and the retention of knowledge in children would be highly significant ('t'-7.221). The results showed that the selected children had significant retention of knowledge after 15 days of exposure to the educational programme given through compact disc. The results are in conformity with Uma and Badiger (1991) who reported that the lecture alone was not effective but combination of audio-visual aids will help for quick learning and longer retention of knowledge. The results of the present study indicated that the mothers had significant ('t'-25.05) gain in knowledge after the educational programme. The results of the mothers study revealed that the mothers of the selected children had significant ('t'-2.760) retention of knowledge after 15 days of exposure to the educational programme.

CONCLUSION

This study for the first time at Madurai District throws light on the serious problem of childhood obesity. It can be concluded that higher socio economic status, poor eating habits and poor physical activity pattern and lack of awareness on complications of childhood obesity are the causative factors of overweight/obesity among the selected children. School authorities may organize nutrition and health education programmes on healthy eating habits, improving physical activities, avoiding

junk foods, importance of balanced food etc., to the school children to enrich their knowledge and to create awareness, since prevention is better than cure. The educational Compact Disc developed has significant improvement in knowledge gain and retention among the selected overweight and obese children. The Compact Disc developed in this study may be used depending upon the situations and preferences.

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