Research Article

Effectiveness of Structured Physical Activity Intervention on Physical Activity and Body Mass Index Among Adolescents – A Pilot Study

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ABSTRACT

Problem Statement: Effectiveness of Structured Physical Activity Intervention on Physical Activity and BMI among adolescents – A Pilot study Report. Introduction: Adolescence is a period of transition from childhood to adulthood, that assumes critical position in the life cycle of human beings. The International Association for the Study of Obesity (IASO) and International Obesity Task Force (IOTF) estimate that 200 million children are either overweight or obese. The main reasons cited are poor dietary habits, inadequate physical activity and increased sedentary behavior. The study was primarily undertaken to assess the Effectiveness of Structured Physical Activity Intervention on Physical Activity and BMI among adolescents. Materials and Methods: A Quantitative research approach with a pre experimental research design was adopted for the study. 30 samples in the age group of 11-14 years were selected by non-probability purposive sampling technique. The study was conducted in a Private English High School, Puducherry Physical Activity Questionnaire- Older Children (PAQ-C) was used to collect the data. Paired t test was used to analyze the data. Results: The results showed that 66.66% of the adolescents engaged in low levels of physical activity. After the structured physical activity practiced by the children for a period of one month the levels of physical activity engaged by the children have been improved which was statistically significant at $p<.05$ and the mean BMI in posttest was $23.46 kg/m^2$ when compared to pretest BMI which was $23.6 kg/m^2$. Conclusion: The study findings reveal that children who are overweight are less likely to engage in physical activity. There is an utmost need that children should engage in at least 60 minutes of physical activity daily which would definitely prevent overweight and obesity and improve their cardio-metabolic status.

Keyword*s:* adolescent, physical activity, overweight, obesity,BMI.

INTRODUCTION

Adolescence (10-19yrs) is a period of transition from childhood to adulthood, it assumes critical position in the life cycle of human beings characterized by an exceptionally rapid rate of growth. WHO describes obesity as one of today's most important public health problems and has designated obesity as a global epidemic and also the most neglected one. Globally, the prevalence of childhood obesity has drastically increased in the recent years[1]. It is reported that among adolescents in the age group of 12-19 years, the obesity rates have increased from 5-18% from 1980 to 2008[2]. The International Association for the Study of Obesity (IASO) and International Obesity Task Force (IOTF) estimate that 200 million children are either overweight or obese[3]. Childhood obesity has gradually become a major public health problem in many developing countries including India. Countries like India are going through an economic and nutrition transition where the later transition is associated with a change in dietary habits, decreasing physical activity and increasing sedentary behavior. The prevalence of childhood obesity in India among school children is between 5.74% and 8.82. It has been observed that in 30% of cases, obesity begin in childhood, and among them, 50% to 80% become obese[4].

It is found that in urban South India, 21.4% boys and 18.5% girls aged 13-18 years are either overweight/obese[5]. A study done in (2008) opined that as children and adolescents are generally more sensitive than adults to outside influences (parents, media and peers), prevention interventions based on changes in the child/adolescent's environment are particularly attractive for changing behavior in this age group to achieve population- based prevention of obesity[6].

Considering the consequences of this epidemic, the researcher felt that school based obesity prevention programme will be instrumental in curbing this menace, and adolescent is a particularly critical period where the correct information has to be imparted[7].

Since lack of physical activity is one of the primary reason cited for obesity, the researcher was interested to assess the level of physical activity among overweight adolescents and to determine the effectiveness of structured physical activity intervention on physical activity and BMI among overweight adolescents.

METHODS

A pre experimental one group pretest-posttest design was adopted for the study. The study was conducted in a

Table 1: Distribution of Adolescents according to their level of Physical Activity during pre and posttests. (N=30)

S.No.	Level of Physical Activity	Pretest		Posttest	
		No.	%	No.	%
1.	Low	20	66.66	06	20
2.	Moderate	10	33.33	24	80
3.	High	-	-	-	-

Table 2: Comparison of physical activity among adolescents. (N=30)

Period of the study	Physical activity		Mean Difference	Paired t value	p Value
	Mean	SD			
Pretest	2.1533	0.73179	0.3667	t = -2.461	0.01374
Posttest	2.52	0.57719			

Private English High school in Puducherry. The population of the study included children in the age group of 11-14 years. A total of 30 overweight children were selected, based on the inclusion criteria. Non probability purposive sampling technique was used to select the samples.

The instrument used to collect the data consisted of two parts.

Part I – consisted of the demographic data of children which included age, type of family, occupational status, educational status, number of siblings, mode of transport to school, BMI etc.,

Part II –Physical Activity Questionnaire- Older Children(PAQ-C) Kowalski, Crocker, M.Doner 2004 was used for the study. The tool consisted of 10 items. The activity score is between 1 and 5 for each item (Total items 09). The mean of the 9 items, results in the final PAQ-C activity summary score[8]. A score of 1-2 indicates low physical activity, score >2 but less than 4 indicates moderate physical activity, 4-5 indicates high physical activity.

After obtaining content validity from the experts the tool was used to collect data. The overweight children who fulfilled the inclusion criteria were selected and informed consent was obtained from the mothers and assent from the adolescents. The level of physical activity was assessed at the beginning of the month and then the subjects were given structured physical activity intervention for 60 minutes daily that consisted of aerobic(Brisk Walking, Running-20 minutes), muscle strengthening (crunches-20 minutes)and bone strengthening activities(Jumping rope, hopping15 minutes followed by cool down time for 5 minutes) for a period of one month daily, under the supervision of the investigator. The posttest was carried out on the 31st day to assess the level of physical activity of the adolescents.

Anthropometric measurements such as height, weight were measured using standard devices. Children were asked to wear only light clothes, have bare feet, and stand straight. Weight was measured to the nearest 0.1 kg using a bathroom weighing scale. Height was measured to the nearest 0.1 cm using a stadiometer. BMI was calculated as body weight (kg) divided by height (m) squared (kg/m^2). Participants were defined as overweight if the BMI values were higher than the sex- and age-specific cut-off values, according to "BMI Reference for Screening Overweight and Obesity by WHO BMI for Age-Boys & BMI for Age-Girls aged 5-19 years[9].

Statistical Methods

Descriptive (frequency and percentage), and inferential statistics (paired t test) was used for analysis of the study.

RESULTS

The demographic characteristics of adolescents reveal that out of 30 samples, 33.33% belonged to the age group of 11-12 years,12-13years and 13-14 years respectively. 46.6% were males and 53.33% were females.80% of the adolescents lived in a nuclear family and 93.33% of them were non vegetarians. 60% of them used bicycle as a mode of transport to school, 23.33% walked to school, and 16.66% used to come by two- wheeler to school. With regard to the level of physical activity (Table 1), 66.66% of the adolescents engaged in low physical activity and 33.33% engaged in moderate levels of physical activity during pretest whereas in posttest, the number of adolescents engaged in moderate level of physical activity has been increased (80%).Also, the data on mean physical activity among adolescents (Table 2) depicted a statistically significant difference (t = -2.461; p<.05) between pretest (M =2.153;SD= 0.73179)and posttest (M= 2.52;SD= 0.57719). The posttest value of BMI (23.46kg/m^2) following intervention showed a very mild decrease when compared to pretest (23.68kg/m^2).

DISCUSSION

The study finding reveals that 66.66% of the overweight children had low levels of physical activity and no one engaged in high level of physical activity. Meta-analysis of previous studies showed that longer the intervention period, greater the decrease in likelihood of being overweight and obese compared to shorter duration of intervention period. The non-randomized controlled trial showed that a school-based physical activity intervention in 7 to 15-year-old children for 12 weeks significantly decreased levels of BMI[10].

CONCLUSION

The study findings reveal that children who are overweight are less likely to engage in physical activity. There is an utmost need that children should engage in at least 60 minutes of physical activity daily which would definitely prevent overweight and obesity and improve their cardio-metabolic status.

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