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DIETARY AND LIFE STYLE CORRELATES ON BMI AND HYPERTENSION AMONG PREPUBERTAL CHILDREN

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ABSTRACT

The objective of this study was to assess the impact of dietary and life style modification on BMI and hypertension of prepubertal children. A quantitative approach with an experimental design was adopted: A comparison with dietary education with physical exercise (DEPE) (n=55) with control (C) group (n = 49) was done. The DEPE is a school-based dietary education and physical exercise for children and BMI and blood pressure (BP) was assessed after 3 months. ANOVA results showed significant improvements ($p < 0.001$) in the intervention group in BMI and BP and also BMI had strong positive correlation with BP. Dietary habits like eating refined foods and carbonated drinks did not show significant difference between study periods in both the groups. To conclude, dietary education and physical exercise in schools with adequate reinforcement is a simple, non-expensive and pleasant way to reach all the children and to bring significant behaviour modifications to reduce the risk factors of non – communicable diseases.

KEYWORDS

BMI, Blood pressure, Physical exercise, Dietary education and Prepubertal children.

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INTRODUCTION

The World Health Organization (WHO) confirmed obesity as a global epidemic with most significant health implication¹. Globally, 340 million children and adolescents aged 5-19 are considered overweight or obese, in 2016². The health implications of this epidemic are intense like insulin resistance type 2 diabetes mellitus, hypertension, obstructive sleep apnea, non-alcoholic steatohepatitis, poor self-esteem, depression, anxiety and a lower health-

related quality of life as well as social problems such as bullying and stigma. Adding up, nearly 80% of obese children persist this trend of obesity and metabolic abnormality into adulthood^{3,4}. Thus, health effects of overweight, combined with these other psychological, social and economic consequences, have contributed to a global economic and health burden⁵. Hence, as per the “WHO Global Strategy on Diet, Physical Activity and Health”, it is imperative for obese children to improve their metabolic health in early childhood for their own health benefit as well as for social and economic benefits of the society as a whole.

Additionally, the science of child development advises us that even temporary deprivations occurred in childhood, can have irreversible effects on their future capabilities and, in turn, a nation's future prospects (UNICEF). Furthermore, any preventive and promotive health interventions targeted in pubertal age will be relatively cost effective, yet yield a lifetime gains, not only for individuals, but also for societies and economies. For this reason, enhancing the school based healthy life style curriculum is the need of the hour for school children.

Thus, the present study investigated the influence of dietary education with physical exercise on BMI and hypertension among prepubertal children.

MATERIAL AND METHODS

A quantitative approach with an experimental design was adopted: A comparison with dietary education with physical exercise (DEPE) group with control (C) group was done. The DEPE is a school-based dietary education and physical exercise for children and BMI and blood pressure (BP) was assessed after 3 months. The sample size was 55 and 49 in the study and reference group respectively. A written consent from the school authorities as well as parents, assent from children and institutional ethical clearance was obtained before the intervention. The study included children who were in the 85th percentile on the WHO BMI chart for their age and gender and had a 90th Systolic/Diastolic percentile as per 4th report of National High Blood Pressure Education Program (NHBPEP) for children and

adolescents of National Heart, Lung, and Blood Institute (NHLBI). The practical session of PE was for minimum of 5 days a week with 45 minutes of physical exercise such as running and chasing, bicycle riding, jumping ropes/hopping and dancing. Post-interventional data was obtained after 3 months.

RESULTS AND DISCUSSION

The body mass index (overweight) and BP showed a significant improvement in the study group between baseline to post-test assessment and the reduction in weight and BP among the prepubertal children showed a significant relationship at $p < 0.001$ (Table No.1) which is consistent with the study published by Andrew Decelis *et al.*, (2014)⁶ who measured physical activity and weight status among 11 -12 year old maltese children. The results imply the need to provide more opportunities for overweight and obese children to be active throughout the week, with a particular emphasis on physical exercise during school hours. Furthermore, a study by Lone DK *et al.*, (2014)⁷ to find the effect of a dietary intervention or dietary intervention plus exercise for a period of 20 weeks, conclude that the exercise and diet group showed significant decline in SBP than diet-only group which is also similar with the present study results.

Further, the dietary habits like eating refined foods and carbonated drinks did not show significant difference between study periods among both the group children which shows that these are the habits are less likely to get influenced and need a long term intervention and may be family involvement as well. The demographic characteristics such as gender ($p < 0.05$), and family history of obesity and chronic illness ($p < 0.05$) had significant association respectively with BMI and systolic BP of the children which is similar with the findings of the few studies which concludes that the demographic and social factors such as age, birth order, increased socioeconomic status and family history of diabetes mellitus found to have a statistically significant association with obesity⁷⁻⁹.

Table No.1: BMI and BP status among study and control group

Group	Pretest				Post Test			
	Overweight (BMI)		Prehypertensive		Overweight (BMI)		Prehypertensive	
	n	Chi Square and p value	n	Chi Square and p value	n	Chi Square and p value	n	Chi Square and p value
Intervention Group	55	$\chi^2 = 11.213$, d.f = 1, P=0.001 ***	55	NA	31	$\chi^2 = 21.416$ d.f = 2 P=0.000 ***	39	$\chi^2 = 23.291$, d.f = 1, P=0.000 ***
Control Group	49		49		42		44	

CONCLUSION

Collectively, the results of the study add support to the hypothesis that dietary education and exercise can positively influence the weight and BP among prepubertal children. In addition, the habit of eating homemade food and making healthier food choices are important to prevent the NCDs in our country. The physical activity should be followed as a family endeavour to enhance the compliance among children as well as to make it as a regular habit. The combination of physical exercise including unorganized sports and dancing with yoga with adequate reinforcement will be such better alternative to bring a desirable change.

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ETHICAL APPROVAL

Institutional ethical committee approval was granted from the Meenakshi Academy of Higher Education and Research, Meenakshi University (Ref: MAHER-MU-010-IEC) to conduct the study.

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DECLARATION OF CONFLICTING INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

BIBLIOGRAPHY

1. World Health Organization. Obesity: preventing and managing the global epidemic, *Report of a WHO consultation, World Health Organ - Tech Rep Ser 894*, 2000, 252.
2. Rosenbloom A L. Increasing incidence of type 2 diabetes in children and adolescents: Treatment considerations, *Pediatric Drugs, Adis International Ltd*, 4(4), 2002, 209-221.
3. Cunningham S J. Predicting obesity in young adulthood from childhood and parental obesity, *N Eng J Med*, 337(13), 1997, 869-873.
4. Guo S S, Chumlea W C. Tracking of body mass index in children in relation to overweight in adulthood, *Am J Clin Nutr*, 70(1), 1999, 145S-148S.
5. Nader P R, O'Brien M, Bradley R, Belsky J, Crosnoe R, et al. Identifying risk for obesity in early childhood, *Pedi*, 118(3), 2006, e594-601.
6. Decelis A, Jago R, Fox K R. Objectively assessed physical activity and weight status in Maltese 11-12 year-olds, *Eur J Sport Sci*, 14(1), 2014, S257-266.
7. Lone D, Thakre S, Borkar A, Deshmukh N, Thakre S. Anthropometric correlates of blood pressure among school children in Nagpur city, central India: A cross-sectional study, *Int J Med Pub He*, 4(4), 2014, 436-440.

8. Sivakumar C P, Jose Joseph, Manjula V D. Dietary correlates of overweight and obesity among adolescents during the current nutrition transition: A cross sectional study in Kerala, *Int J Community Med Public Heal*, 4(9), 2017, 3140-3144. Vishnu Prasad R, Bazroy J, Singh Z. Prevalence of overweight and obesity among adolescent students in Pondicherry, South India, *Int J Nutr Pharmacol Neurol Dis*, 6(2), 2016, 72-75.
9. Lee J, Zhang T, Chu T L, Gu X, Zhu P. Effects of a fundamental motor skill-based afterschool program on children's physical and cognitive health outcomes, *Int J Environ Res Public Health*, 17(3), 2020, 733.

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