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# Correlates of overweight and obesity among school going children of Himachal Pradesh

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## ABSTRACT

Overweight and obesity are important determinants of health leading to adverse metabolic changes and increase the risk of non-communicable diseases. Following the increase in adult obesity, the proportion of overweight and obese children and adolescents has also been increasing. Erroneous life style and food habits are mainly responsible for rising graph of obesity. Hence, the present study was undertaken to study the magnitude of overweight/obesity and its correlates among school-age children ranging from 5-15 years, on the basis of 85<sup>th</sup> and 95<sup>th</sup> percentile of body mass index (BMI). Result showed the prevalence of overweight and obesity as 10.33% and 3.33%, respectively. Among number of other correlates related with life style, *Kapha* predominant *Prakriti* evolved as an important predictor of obesity. Data of this study clearly delineates that obesity is an increasing malady in rural and semi urban populations also on the pattern of metro cities.

**Key words:** Overweight, Obesity, Body Mass Index (BMI), Prakriti.

## INTRODUCTION

Paediatric obesity is a public health problem of increasing concern throughout in the world especially in populations undergoing cultural transition (Schonfield-Warden N. et al. 1997). The WHO in 1998 designated obesity as a global epidemic (WHO, 1998). India, is also facing the epidemic of obesity and its associated diseases, especially in children and adolescents (Indian Pediatric 1997). Over the past few years, childhood obesity is increasingly being observed with the changing lifestyle of families with

increased purchasing power, increasing hours of inactivity due to television, video games and computers have replaced outdoor games and other social activities (Singh M. et al. 2005). Obesity can be seen as the first wave of a defined cluster of non communicable diseases called “New World Syndrome” creating an enormous socioeconomic and public health burden in poorer countries (WHO, 2000). The World Health Organization has described obesity as one of today’s most neglected public health problems. Following the increase in adult obesity, the proportion of children and adolescents who are overweight and obese have also been increasing (Wong JPS. et al. 2005) Globally, an estimated 10 per cent of school-aged children, between 5 and 17 yr. of age, are overweight or obese (www.iotf.org). The most important consequence of childhood obesity is its persistence into adulthood with all its health risks. The health risks include cardiovascular diseases, diabetes, osteoarthritis, gallbladder disease and some sex hormone-sensitive cancers (WHO, 2000). It is more likely to persist when its onset is in late childhood or adolescence (Whitaker CR. et al 1998; Wright CM. et al. 2001). If the underlying causes of the obesity epidemic are not addressed, it has the potential to

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overwhelm health systems throughout the world. Mortality risk increases with increased weight of children (Styne DM. et al.2001).

Since very limited data is available from India regarding this malady, the present study was undertaken to study the magnitude of overweight/obesity and its correlates among children in Himachal Pradesh.

## MATERIAL AND METHODS

A population of 1200 children studying in different schools of rural and semi urban areas of Himachal Pradesh was studied to assess the prevalence of overweight/obesity and its correlates. Information on family characteristics like residence, religion, type of family, education and occupation of parents and information on individual characteristics like age, sex etc. were recorded. Anthropometric measurements of weight, standing height and waist circumference were measured by utilizing standard methodology. BMI was calculated as weight in kilograms/(height in meter)<sup>2</sup> Overweight and obesity was assessed by BMI for age. Student who had BMI for age >85<sup>th</sup> and < 95<sup>th</sup> percentile of reference population were classified as overweight. Students who had BMI for age >95<sup>th</sup> percentile of reference population were classified as obese.

Obese and overweight children were identified on the basis of cut off BMI. Information's regarding their family history, breast feeding history, weaning, eating habits and time spent on television viewing and outdoor games were gathered to find out their relation with obesity. A special emphasis was paid on Prakriti analysis of obese individuals. All the study subjects were counseled about the risk factors related with obesity.

## OBSERVATIONS AND RESULTS

**Table 1: Showing prevalence of overweight/obesity (n=120)**

SN	BMI (in percentile)	No. of Subjects	Percentage
1.	>75 <sup>th</sup>	31	02.58
2.	<85 <sup>th</sup>	1005	83.75

3.	85 <sup>th</sup> – 95 <sup>th</sup>	124	10.33
4.	>95 <sup>th</sup>	40	03.33

**Table 2: Age profile of obese children (n= 164)**

SN	Age (in years)	No. of children	Percentage
1.	5-7 years	50	30.49
2.	7-9 years	21	12.80
3.	9-11 years	28	17.08
4.	11-13 years	29	17.68
5.	13-15 years	36	21.95

## DISCUSSION ON SURVEY STUDY

Overweight/obesity among children is progressing towards epidemic level. In India, very few studies have been carried out to study the overweight/obesity and majority of them have been carried out in metropolitan cities. In the present study, prevalence of overweight and obesity was found to be 10.33% and 3.33%, respectively. Published data regarding this aspect, from India is scarce. A study conducted in 1990 amongst 3,861 school children reported the prevalence of obesity as 7.5% (Gupta AK. et al 1990). A total of 870 school children were included in another cross-sectional study conducted in one public school of Delhi catering to the affluent segment of population, and the overall prevalence of obesity was found to be 7.4% (Kapil U. et al.2002). A study from Jaipur showed that among children from middle and upper middle class, prevalence of obesity was 10.1% (Gupta R. et al. 1998). So far as the prevalence of established obesity (BMI >95<sup>th</sup> percentile) is concerned these values are much higher than values observed in the present study viz., 3.33%. But the prevalence of overweight (BMI 85<sup>th</sup>-95<sup>th</sup> percentile) in the present study was 10.33%.

SN	Variable		No. of children	Percentage
1.	Sex	Male	80	48.78
		Female	84	51.22

2.	Religion	Hindu	158	96.34
		Sikh	06	3.66
3.	Habitat	Rural	119	72.56
		Urban	45	27.44
4.	Working mother	Yes	85	51.83
		No	79	48.17
5.	Family history	Yes	99	60.35
		No	79	48.17
6.	Socio-economic status	Higher	45	27.44
		Upper middle	74	45.12
		Middle	41	25.00
		Lower middle	4	2.44
		Lower	0	0
7.	<i>Sharirik Prakriti</i>	<i>Vata Pitta</i>	7	4.27
		<i>Pitta Vata</i>	14	8.54
		<i>Kapha Pitta</i>	58	35.36
		<i>Pitta Kapha</i>	22	13.41
		<i>Kapha Vata</i>	47	28.66
		<i>Vata Kapha</i>	16	9.76
8.	Breast feeding	< 6 months	86	52.44
		> 6 months	70	42.68
9.	Weaning age	< 6 months	90	54.88
		> 6 months	74	45.12
10.	Frequency of major meal/day	Two	9	5.49
		Three	87	53.05
		> Three	68	41.46
11.	Frequency of	Two	44	26.82

	supplementary diet/day	Three	88	53.66
		> Three	32	19.51
12.	Quality of supplementary food	Junk food	93	56.71
		Biscuit/chocolate	53	32.32
		Carbonated drinks	10	6.09
		Milk & its product	8	4.88
13.	Dominant rasa in diet	<i>Madhur</i>	106	64.64
		<i>Lavan/Amla</i>	58	36.36
14.	TV viewing while taking meals	Always	36	21.95
		Frequently	106	64.64
		Occasionally	22	13.41
15.	Duration of outdoor game/day	< 30 min.	92	56.09
		> 30 min.	72	43.91
16.	Duration of TV viewing/computer use/day	< 30 min.	08	4.88
		> 30 min.	156	95.12

The present survey study was conducted in small town of Himachal Pradesh which is not exposed to big city culture. In this area, not many fast food avenues are present - which might be one of the factor that overweight and obesity levels are less here than in the children of other metropolitan cities. However, still a lurking danger is evident as the prevalence of overweight in the present study was found to be comparatively much higher than established obesity. This indicates that now our rural and semi urban areas are also growing obese at a high pace. If the aggressive preventive measures are not taken well in time, then our today's overweight (BMI 85<sup>th</sup>-95<sup>th</sup> percentile) children will become obese (BMI >95<sup>th</sup> percentile) in near future.

In this study, the important determinants of the overweight/obesity were observed as working

mothers, breast feeding for < 6 months, weaning age <6 months, excessive consumption of junk food as supplementary diet, excessive indulgence in *Madhur Rasa* (sweet food items), TV viewing while taking meals, outdoor play of < 30 minutes/day and computer/ TV viewing >30 minutes/day. Most of the above identified factors are family characteristics. This implies the importance of the family characteristics in the causation or predisposition of an individual to overweight/obesity. Similar predisposition is also reported in Portuguese children (Pandez et al 2005). All these factors are related with affluence and sedentary lifestyle. Previously overweight/obesity was considered to be the disease of urban area in all age groups. But now rural/semi urban area of India are also showing the same trend. Food in semi urban area has also been replaced by high calorie snacks and junk food. Educational overload, lack of time for playing and increased television viewing and computer use had made life sedentary. Another study also reported that children who spent more time watching television had a higher BMI and a higher per cent of body fat and were less physically active (Bhave S. et.al. 2004; Giammattei et al. 2003). Mother's service/business on the one hand adds to the affluence and on other hand due to her busy schedule she could not devote sufficient time with her child, which is required for the development of healthy living and eating habits in child. Both of these factors contribute to increased risk of overweight/ obesity.

In this study, it was observed that there has been a significant increase in overweight and obesity in children belonging to affluent, upper middle class and middle class income groups. Some studies based on relationship between obesity and socio-economic status have been conducted the world over. The relationship between obesity and socio-economic status varied across countries. Higher socio-economic status subjects were more likely to be obese in China and Russia, but in the USA, low socio-economic status groups were at a higher risk. Furthermore, in two large longitudinal studies from England, childhood socio-economic status predicted the development of obesity in adult life. (Power C. et al. 1988; Wang Y. et

al.2001). Hence, the present study has highlighted that obesity is an emerging health problem in the children belonging to affluent, upper middle class and middle class income groups families in rural/semi urban areas .

It was observed in the study that most of the obese children (52.44%) could get the opportunity of breast feeding for <6 months. It is the documented fact that duration of breastfeeding is inversely related to pediatric overweight (Armstrong J. et al. Lancet 2002). In a study it was reported that greater the duration of breast feeding, the lower the odds of overweight. For each month of breast feeding up to age 9 months, the odds of overweight decreased by 4%. This decline resulted in more than a 30% decrease in the odds of overweight for a child breastfed for 9 months when the comparison was with a child never breastfed. (Harder T, Bergmann et al.2005; Toschke AM et al. 2002)

Another most important fact which emerged out of present study is that most of (64%) the obese children had *Kapha* predominant *Sharirik Prakriti*. Hence *Sharirik Prakriti* of an individual can be used as the predictor of impending obesity and other similar concomitant metabolic problems and life style modifications in this vulnerable segment can help in preventing impending obesity.

## CONCLUSION

This survey study clearly suggests that most of the predictors of childhood obesity are amendable to dietary and lifestyle modifications. Since, family characteristics have been found to be important for the predisposition of an individual to overweight/obesity, preventive and promotive efforts need to be directed towards family for the health of future generation. *Sharirik Prakriti* (Ayurvedic physical constitution) of an individual can be used as the predictor of impending obesity. So, timely counseling and life style modifications in this vulnerable segment can help in preventing impending obesity.

## REFERENCES

1. Charaka Samhita with "Ayurvedeepika" commentary by Chakrapanidutta, Edi. By Vd. Acharya, Chaurkhambha Samskrit Sansthana, Varanasi, 2001.
2. Sushruta Samhita, sharirsthana with "Ayurveda Rahasyadeepika" commentary by Dr. Bhaskar Govind Ghanekar, Meherchand Lachamandas Publications, New Delhi 2002.
3. Abhimanyu Kumar; Child Health care in Ayurveda; Sri Satguru Publication, New Delhi.
4. Ghai O.P; Ghai Essential Pediatrics, Dr. O.P. Ghai Delhi, 6<sup>th</sup> Ed. Revised and Enlarged 2005.
5. Gupte Suraj; The Short Text Book of Pediatrics; Jaypee Borhters, Medical Publishers Pvt. Ltd. New Delhi (India); 9th Ed. 2001
6. IAP Text Book of Pediatrics ; Jaypee brother, Medical Publishers (P) Ltd. New Delhi, (India) Rev. Reprint 2003.
7. Bhatt AD, Dalal DG, Shah SJ, Joshi BA, Gajjar MN, Vaidya RA, Vaidya AB, Antakar DS. Conceptual and methodologic challenges of assessing the short term efficacy of Guggulu in obesity: data emergent from a naturalistic clinical trial. *J Postgrad Med* 1995; 41:5-7).
8. International Life Sciences Institute. Preventing childhood obesity is a current research focus: Initiatives corporation to show information and stem epidemic. *The PAN report : Physical Activity and nutrition*. USA international life science institute 2000; 2 :P5
9. Schonfield Warden N, Warden CH. Pediatric obesity : an overview of etiology and treatment *pediatric Clinic North Am* 1997 ; 44; 339-61
10. Styne DM. Childhood and adolescent obesity : prevalence and significance. In Styne DM, editor. *Childhood and adolescent obesity*. Pediatric Clinic of North America. Philadelphia : WB Saunders Company 2001, P. 823-53
11. WHO/IASO/IOTF. The Asia Pacific Perspective : Redefining Obesity and its treatment. Health Communications Australia Pty Ltd. 2000.
12. Yoshida K. Epidemiological analysis of behavior and lifestyle in Toyama study. Psychosomatic disturbance research "research concerning prevention of adult chronic disease from childhood. Tokyo : Ministry of Health Welfare, Japan, March 1992.
13. Gupta AK, Ahmed AJ. Childhood obesity and hypertension. *Indian Pediatr* 1990; 27 : 333-7

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