

Body Mass Index (BMI) and Self-Perception of Weight Among School Going Adolescents of Vadodara City



Medical Science

KEYWORDS : Adolescence; body mass index; body weight perception

Dr Jayprakashkumar I. Macwana

Assistant Professor, Department of Community Medicine, GMERS Medical College Valsad

Dr R K Baxi

Professor, Department of PSM, Medical College Baroda, Vadodara.

ABSTRACT

Background: Adolescence (10-19 year) is a period of transition from childhood to adulthood. 'Body image' is a powerful factor that determines how adolescents feel about themselves. The objective of the study was to understand body weight perception of adolescents.

Methods: This cross-sectional study was conducted in the 15 schools with a sample of 1050 adolescents. Self-administered, semi-structured and pre-tested questionnaire was used to elicit the required information.

Results: 19.7% of adolescents perceived that their body weight was less, while 18% of adolescents perceived that their body weight was more. 8.2% of overweight/obese adolescents perceived that their body weight less, while 27.7% of overweight/obese adolescents perceived that their body weight was normal. Among non-overweight/non-obese adolescents, 12.6% also felt that their bodyweight is more.

Conclusion: Inappropriate perceptions about body weight leads to increase in the problems related to overweight/obesity.

INTRODUCTION:

The World Health Organization (WHO) describes overweight and obesity as one of today's most important public health problems, which is escalating as a 'Global Epidemic'. The problem of overweight and obesity is confined not only to adults but also being reported among the children and adolescents of developed as well as developing countries. Since, adolescence 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.(1)

Adolescents constitute 18-25% of the population in countries of South East Asia Region (SEAR). In India, they account for one fifth of the total population and are a significant human resource that needs to be given ample opportunity for holistic development towards achieving their full potential.(2) In India obesity is emerging as an important health problem particularly in urban areas, paradoxically co-existing with under-nutrition imparting 'Double Burden of Disease.(3)

The physical changes have been implicated as triggers for many behavioural changes and manifestations during adolescence. Many of these behavioural changes are associated with how the adolescents perceive their bodies. 'Body image' is a powerful factor that determines how adolescents feel about themselves. If one suffers from body image disturbances, it often leads to a host of difficulties ranging from low self-esteem to anorexia and bulimia nervosa, body dysmorphic disorder.(4)

Weight perception is one of the motivating factors for weight control behaviours and is a better predictor than actual weight for adolescents to diet or exercise.(5)

However, few studies have been conducted on body weight perception among adolescents. So, the present study was conducted to understand body weight perception among adolescents and to correlate their perception of the appropriateness of their weight with their actual Body Mass Index (BMI) status.

MATERIALS AND METHODS

A cross sectional study was conducted between July 2012 to December 2012 among urban school going adolescents

in the age group of 11 to 19 years. Studies carried out in the past have revealed that the prevalence of overweight and obesity among urban adolescents was in the range of 10-15%.(6) Assuming a current prevalence (P) of 10% overweight and obesity, with 95% confidence interval, 20% allowable error (L), sample size estimated was 865 children. [Using formula $n = \frac{Z_{1-\alpha/2}^2 \times PQ}{L^2}$; where $\alpha=5\%$, $P=10\%$, $Q=90\%$, $L=2(20\% \text{ of } P)$](7) Estimating the non-response rate of 20%, an additional 173 subjects were included. So, total sample size came to 1038 (865+173) which was rounded to 1050.

So, total 1050 participants were randomly selected from 15 schools after taking written informed consent from school authority. It was decided to include students from classes 6 to 12 in the study. A pre-tested, semi structured, self administered questionnaire was used which includes demographic information, dietary information and physical activity questionnaire. It also included their perception about appropriateness of their height and weight.

An anthropometric measurement such as height and weight of each of the adolescents was done. The height was measured using meter scale without footwear to the nearest 1 cm. Body Weight was measured without any footwear with minimal clothing (school uniform) using spring balance calibrated to 0.5 kg accuracy.

BMI was calculated by formula weight in kg divided by square of height in meter. Adolescents were classified as overweight and obese by WHO Reference 2007 with respect to their age and sex.(8)

Data was entered in Microsoft Excel Sheet and analyzed using Epi Info(TM) 3.5.1 software. Before starting the study, necessary clearances and permissions were obtained from concerned authorities including District Education Office, School authorities, and Scientific and Ethical Review Committee.

RESULTS

In this study 577 (55%) were boys and 473(45%) were girls. Out of 1050 participants 7.8% were overweight and 2.7% were obese. So, the combined prevalence of overweight and obesity was 10.5%.

Table :1 Distribution of study subjects based on their body weight perception

Perception about weight	Non Overweight/ Non obese N (%)	Overweight/ obese N (%)	Total N (%)
Less	198 (21.1)	9 (8.2)	207 (19.7)
Normal	624 (66.4)	30 (27.3)	654 (62.3)
More	118 (12.6)	71 (64.6)	189 (18)
Total	940 (89.5)	110 (10.5)	1050

As the table 1 shows that 62.3% of study subjects perceived themselves as of normal weight.19.7% of study subjects perceived that their body weight less, while 18% of study subjects perceived that their body weight was more.

While 8.2% of overweight/obese study subjects perceived that their body weight less, while 27.7 % of overweight/ obese study subjects perceived that their body weight was normal. Among non-overweight/non-obese subjects, 12.6% also felt that their bodyweight is more.

Table 2: Distribution of study subjects based on their body weight perception and gender

Per-ception about weight	BOYS(N=577)			GIRLS (N=473)		
	Non OwOb* N (%)	OwOb** N (%)	Total N (%)	Non OwOb* N (%)	OwOb** N (%)	Total N (%)
Less	117 (22.9)	0 (0)	117 (20.3)	81 (18.8)	9 (20.9)	90 (19)
Normal	339 (66.5)	22 (32.8)	361 (62.6)	285 (66.3)	8 (18.6)	293 (61.9)
More	54 (10.6)	45 (67.2)	99 (17.2)	64 (14.9)	26 (60.5)	90 (19)
Total	510	67	577	430	43	473

*Non-OwOb: Non-overweight & Non-obese, **OwOb: overweight/obese

Table 2 shows the distribution of study subjects based on their body weight perception and gender. Regarding their perception about their body weight 62.6% of the boys and 61.9% of the girls felt that they had normal body weight. 20.3% of the boys and 19% of the girls perceived their bodyweight was less. While 17.2 of the boys and 19% of the girls perceived their bodyweight was more.

Among overweight/obese boys none of them felt their body weight was less and 32.8% of them felt their body weight was normal. While Among overweight/obese girls 20.9% of them felt their body weight was less and 18.6% of them felt their body weight was normal.

Among non-overweight/non-obese boys and girls, 10.6% boys and 14.9% girls also perceived that their bodyweight was more.

DISCUSSION:

The present study throws light upon adolescents' perception on their body weight. This study revealed that 10.5% subjects were overweight/obese, remaining 89.5% were of normal weight/ underweight.

The present study shows that 62.3% of study subjects perceived themselves as of normal weight.19.7% of study subjects perceived that their body weight less, while 18% of study subjects perceived that their body weight was more. Among non-overweight/non-obese adolescents, 12.6% also felt that their bodyweight is more.

The study conducted in North Karnataka by Banjade B. et al. showed that 82.7% of study subjects perceived themselves as normal weight for their age and height, 7.6%

perceived as of underweight and 9.7% perceived as of overweight/obese. Among the subjects who perceived themselves as of normal weight, 10.3% were overweight/ obese.(9)

Whereas study conducted in Kerala 72.7% of study subjects perceived themselves as of normal weight for their age and height, 16.8% perceived as underweight and 10.5% perceived as overweight/obese.(10)

Similarly, study conducted in Hongkong revealed that 20.5%, 43.9% and 35.7% perceived themselves as underweight, normal and overweight respectively.(11)

Overweight adolescents should be better informed and empowered to follow recommended weight loss strategies. One of the motivating factors for weight control behaviours is body weight perception. It is a better predictor than actual weight for adolescents with diet or exercise.

CONCLUSION

Self-perception of body weight was incorrect. Inappropriate perceptions about body weight leads to increase in the problems related to overweight/obesity. The lack of knowledge about and access to growth charts has probably made it difficult for adolescents to evaluate their weight status objectively. Overweight adolescents should be better informed and empowered to follow recommended weight loss strategies.

REFERENCES

1. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation. World Health Organ Tech Rep Ser. 2000;894:i-xii, 1-253.
2. Adolescent Nutrition: A Review of the Situation in Selected South-East Asian Countries WHO Regional Office for South-East Asia, 8-15 March 2006.
3. Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S. Prevalence of obesity among affluent adolescent school children in Delhi, Indian Paediatr 2002; 39:449-52.
4. Kotecha PV, Patel S, Mazumdar VS et.al. Body mass index (BMI) and self-perception of weight and height among school going adolescents in urban Vadodara, India. Int Med Sci Public Health 2013;2:743-46.
5. Cash TF, Pruzinsky T. Body image: Development, deviance, and change. New York: Guilford Press; 1990. p. 20-4.
6. Bhav S, Bavdekar A, Otiv M. IAP National Task force for childhood prevention of adult diseases : Childhood obesity. Indian Pediatrics. June 2004;41:559-75.
7. Lwanga SK, Lemeshow S. Sample size Determination in Health statistics - A Practical manual. Geneva: WHO; 1991.
8. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. Bull World Health Organ. 2007 Sep;85(9):660-7.
9. Banjade B, Naik VA, Narasannavar AB. Body weight perception by college going adolescents of North Karnataka, India- A cross sectional study. Nepal Journal of Medical Sciences. July-December 2014;3(2):106-109.
10. Ramesh K. Body weight/image perceptions and prevalence of obesity among adolescents-Kerala, India. Int J Health Allied Sci 2012;1:92-7.
11. Cheung CP, Patrica LS, Lam ST, et al. A study on body weight perception and weight control behaviours among adolescents in Hong Kong. Hong Kong Med J. 2007;13:16-21.