

Body weight perception by college going adolescents of North Karnataka, India- A cross sectional study

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ABSTRACT

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

Methods: This cross-sectional study was conducted in the two Pre-University colleges with a sample of 330 adolescents. Pre-designed and pre-tested questionnaire was used to elicit the required information.

Results: 13 % of study participants underestimated their body weight and 11.2 % over estimated their body weight. 82.7% of study subjects perceived themselves as normal weight for their age and height, 7.6% perceived as underweight and 9.7% perceived as overweight/obese.

Conclusion: Inappropriate perceptions about body weight leads to increase in the problems related to overweight/obesity. Lack of knowledge about and access to growth charts has probably made difficult for adolescents to evaluate their weight status objectively. So, college can play an effective role to help them to know actual body weight

Keywords: Adolescence; body mass index; body weight perception; obesity; overweight

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Background

Globally, the leading risk factors for mortality are raised blood pressure (responsible for 13% of deaths globally), followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%), and also overweight and obesity (5%).¹ Obesity is the fifth leading risk factor for death.² More than 100 million individuals are obese in India. India is in the middle of an obesity epidemic, which has serious health ramifications.³

Adolescence (10-19 year) is a period of transition from childhood to adulthood; it assumes a critical position in the life cycle of human beings characterized by an exceptionally rapid rate of growth. In SEAR (South East Asian Region), adolescents constitute 18-25% of the total population. India accounts for 20% of the total population.⁴

The factor that determines how adolescents feel about themselves is 'Body image'. An individual suffering from body image disturbances often suffer from low self-esteem, anorexia, bulimia nervosa and body dysmorphic disorder.⁵ One's perception does not always reflect reality, but understanding and predicting the behaviour towards weight control is being determined by how adolescents perceived about their body weight. Body weight perception is influenced by various factors as: age, sex, family, peers, media and ethnicity.⁶

However, few studies have been conducted on body weight perception and weight control practices. So the present study was conducted to understand body weight perception of adolescents, their weight control practices and barrier felt while doing exercise.

Methods

A cross-sectional study was conducted in the two pre-university colleges of Belgaum city, North Karnataka, India from January to September 2013. Adolescents (10-19) who gave the consent were included in the study. Adolescents having the chronic diseases were excluded.

The sample size was calculated by taking prevalence (p) of 29% ⁷ and the allowable error (d) 5%. By using the formula $N = 4pq/d^2$ ($q=1-p$) the sample size was calculated to be 329 and rounded off to 330. In the Belgaum city, Pre-University Colleges (PUC) were clustered in the North and South zones. Two PUC one from each zone were selected by Simple Random Sampling (Lottery Method).

Pre designed and pre tested questionnaire was used to collect the information on socio-demographic status, weight perception and anthropometric measurements. Standard Weighing machine and measurement tape were used to measure weight and height respectively.

By placing the weighing scale in the horizontal surface, participants were made to stand in erect position at the center of the scale; without shoes and heavy clothing. The weight was measured in the unit “Kg” with the nearest of 0.1 kg. To ensure the quality, weighing machine was periodically checked. The marking was done on the wall with a measuring tape and height was measured. The participants were made to stand in erect position, without shoes, with feet together, head touching the wall and eye looking straight ahead. The height was measured in the unit “cm” with nearest to 0.1 cm.

Based on WHO growth chart -2000 for children and adolescents aged 2-20 years participants were classified, i.e. BMI-for-age between 85th to 95th percentiles were considered “overweight” and above the 95th percentile as “Obesity” and < 5th percentile as “Underweight”.

Ethical clearance was obtained from the Institutional Ethics Committee (IEC) of KLEU, J.N.M.C. (Jawaharlal Nehru Medical College). Participants were fully informed and written assent was taken. Appropriate code was given to maintain the complete confidentiality of the participants. Data entry and analysis was made by using Statistical Package for Social Science (SPSS) software (Version 20.0). Mean, proportion and percentage were calculated. Chi square test was applied for establishing an association with P value < 0.05.

Results

In this study 152 (46.1%) were boys and 178 (53.9%) were girls with a mean age of 16.9 years. Among them majority belonged to age 17 years (61.5%, Male=49.3% and

Female=50.7%). Most of the people (79.4%) were Hindus followed by Muslims (11.2%), Jain (7.9%) and Christians (1.5%). Almost 67.6% of the participants belonged to the nuclear family, 29.4% belonged to joint family and 3% belonged to an extended family. According to the modified B.G. Prasad classification 34.8% participants belonged to class II, followed by class III (24.5%), class I (19.7%), Class IV (16.4%) and Class V (4.5%). The prevalence of overweight/ obesity in the present study was 17% (16.4% among male and 17.4 % among female). The prevalence of underweight was 12.1% and 70.9% were normal.

Table 1: Distribution of study Participants based on estimated body weight and actual BMI

| Estimated body weight | Body Mass Index (BMI) | | | | | | Total | |
|-----------------------|-----------------------|------|--------|------|--------------------|------|-------|------|
| | Under-weight | | Normal | | Over-weight/ Obese | | No. | % |
| | No. | % | No. | % | No. | % | | |
| Correct | 11 | 4.4 | 216 | 86.4 | 23 | 9.2 | 250 | 75.8 |
| Underestimation | 1 | 2.3 | 9 | 20.9 | 33 | 76.7 | 43 | 13 |
| Overestimation | 28 | 75.7 | 9 | 24.3 | 0 | 0.0 | 37 | 11.2 |
| Total | 40 | 12.1 | 234 | 70.9 | 56 | 17 | 330 | 100 |

The study revealed that 13 % of study participants underestimated their body weight and 11.2 % over estimated their body weight. The prevalence of overweight/obesity was higher among those who underestimated their body weight (76.7%) compared to subjects who overestimated (0%) but the prevalence of underweight was higher among the subjects who overestimated their body weight (75.7%) compared to subjects who underestimated (2.3%). This was found to be statistically significant (Chi square = 279.64; df = 4; P value <0.001) [Table 1].

Table 2: Distribution of Study participants based on body weight perception and actual BMI

| Perception to-ward body weight | Body Mass Index (BMI) | | | | | | Total | |
|--------------------------------|-----------------------|------|--------|------|--------------------|------|-------|------|
| | Under-weight | | Normal | | Over-weight/ Obese | | No. | % |
| | No. | % | No. | % | No. | % | | |
| Underweight | 11 | 44 | 9 | 36 | 5 | 20 | 25 | 7.6 |
| Normal | 29 | 10.6 | 216 | 79.1 | 28 | 10.3 | 273 | 82.7 |
| Overweight/Obese | 0 | 0 | 9 | 28.1 | 23 | 71.9 | 32 | 9.7 |
| Total | 40 | 12.1 | 234 | 70.9 | 56 | 17 | 330 | 100 |

The table 2 showed that 82.7% of study subjects perceived themselves as of 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, and 10.6% were underweight. Among

the subjects who perceived themselves as underweight, 20% were overweight/ obese, and 36% were of normal weight. Among the subjects who perceived themselves as overweight/obese, 0% were underweight and 28.1% were of normal weight and the association was statistically significant (chi-square = 104.73; df = 4; P value < 0.001) (Table no.2).

Table 3: Current practices of study participants to improve health (n=230)

| Current Practices to improve health* | Number | Percentage |
|---|--------|------------|
| Eating healthier foods | 102 | 58.6% |
| Doing more cardio exercise (Running, walking) | 83 | 47.7% |
| Doing more strength and toning exercise | 76 | 43.7% |
| Restriction on their own diet | 35 | 20.1% |
| Dieting with a plan | 28 | 16.1% |
| Total | 481 | 186.2% |

*=Multiple responses

Among the total participants 47.7% were not doing anything to improve their health. Among rest (52.3%) of the participants were trying some sort of the practice to improve their health status. The most common practice was eating healthier foods (58.6%), followed by doing more Cardio exercise like running, walking (47.7%), doing more strength and toning exercise like push up, weight (43.7%), restriction on their own diet (20.1%) and dieting with a plan (16.1%)(Table no.3).

Table 4: Barriers felt by study participants for doing the exercise (n=230)

| Barriers for doing exercise* | Number | Percentage |
|------------------------------|--------|------------|
| Stress | 45 | 17.6% |
| Lack of energy | 77 | 30.1% |
| Busy schedule | 142 | 55.5% |
| Lack of support from friends | 73 | 28.5% |
| Financial | 94 | 36.7% |
| Ignorance | 169 | 66.0% |
| Total | 675 | 234.4% |

*=Multiple responses

Among the total participants, 22.7% said they are in good shape or don't want to get in better shape. Among those who want to get in better shape, more common barriers were Ignorance (66%), followed by busy schedule of participants (55.5%), Financial (36.7%), lack of energy (30.1%) and lack of support from friend (28.5%)(Table no.4)

Discussion

The present study threw light upon adolescent's perception about their body weight. This study revealed that 17% subjects are overweight/ obese, 12.1% are underweight, and remaining 70.9% are of normal weight. The prevalence of overweight/obesity was 17% in our study, which is similar to study conducted in Gujarat. ⁴ The study conducted in Kerala the prevalence was 18.3% ⁸ as well as study conducted in Mauritius, prevalence was found to be 11.7%. ⁶

In the present study, 13% of study participants underestimated their body weight and 11.2% over estimated their body weight. The prevalence of overweight/obesity was high among those who underestimated their body weight (76.7%) compared to subjects who overestimated (0%) but the prevalence of underweight was higher among the subjects who overestimated their body weight (75.7%) compared to subjects who underestimated (2.3%). This was found to be statistically significant. The study conducted in Kerala showed 67.3% of subjects underestimated their body weight and 15.5% overestimated their body weight. The prevalence of overweight/obesity was higher among those who underestimated their body weight (18.7%) compared to subjects who overestimated (6.7%), but the prevalence of underweight was higher among the subjects who overestimated their body weight (60.8%) compared to subjects who underestimated (22%).⁸

In the present study, it was found 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, and 10.6% were underweight. Among the subjects who perceived themselves as underweight, 20% are overweight/ obese, and 36% are of normal weight. Among the subjects who perceived themselves as overweight/obese, 0% were underweight and 28.1% were of normal weight and association was statistically significant, 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.⁸ The study conducted in Ernakulum revealed that 11% adolescents perceived themselves as underweight, 38% perceived as normal and rest as overweight.⁹ Similarly, study conducted in Hongkong revealed that 20.5%, 43.9% and 35.7% perceived themselves as underweight, normal and overweight respectively.¹⁰ The study conducted in south India showed 32%, 52.6% and 15.4% adolescents perceived themselves as underweight, normal and overweight respectively.¹¹

24.2% of college adolescents could not appropriately classify

their weight status; and nearly 13% of them underestimated their own body weight. Overweight adolescents should be better informed and empowered to follow recommended weight loss strategies. One of the motivating factors for weight control behaviors is body weight perception. It is a better predictor than actual weight for adolescents with diet or exercise.

Conclusion

Inappropriate perceptions about body weight leads to increase in the problems related to overweight/obesity. Lack of knowledge about and access to growth charts has probably made it difficult for adolescents to evaluate their weight status objectively. So, college can play an effective role to help adolescents to know actual body weight by periodic anthropometric measurement and calculation of BMI. Body weight perception motivates adolescents for weight control behaviors, promotion of healthy body image perception and healthy eating. Media also can play important roles in influencing body weight perception, building a positive self-image, addressing psychosocial difficulties, and tackling harmful societal norms.

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