

Body weight and body shape concerns and related behaviours among Indian urban adolescent girls

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Abstract

Objective: To assess the associations of body weight and body shape concerns and related behaviours with actual weight status among urban adolescent girls.

Design: In the present cross-sectional study, a self-administered questionnaire was used to collect data on body weight and body shape concerns and related behaviours. Sociodemographic information was collected using a pre-tested schedule. Weight and height of each girl were measured to assess actual weight status.

Setting: Twin cities of Kolkata and Howrah, West Bengal, India.

Subjects: A total of 1223 adolescent girls aged 14–19 years were selected from nine schools in Kolkata and Howrah in West Bengal.

Results: Many overweight girls perceived themselves as overweight and engaged in weight-reducing activities. However, several normal-weight girls also perceived them as overweight and attempted to lose weight. Unhealthy eating practices to reduce weight were followed by both overweight and normal-weight girls and even by a few underweight girls. Multivariate binary logistic regression showed a significant association between actual weight status and use of unhealthy weight-loss measures. The likelihood of adopting unhealthy eating practices was significantly higher among overweight than normal-weight girls.

Conclusions: Health education programmes should be introduced at schools to promote effective weight-control practices that help dispel myths about weight loss.

Keywords

Body weight concerns
Body shape concerns
Weight-related behaviours
Urban adolescent girls

Adolescence is a critical period of life characterised by rapid growth and development, both physically and psychologically^(1,2). Changes in physical appearance make adolescents, particularly girls, self-conscious about their bodies^(3–5). Body image conception of an individual may or may not match with the objective reality. As a consequence, in spite of being within a healthy weight range, a girl may become seriously concerned about her body weight and shape^(6–8). Western societies introduce the concept of a slim and slender body for females as the symbol of physical attractiveness and beauty. This concept seems to develop dissatisfaction with body weight and shape among adolescent girls^(9,10). Preoccupation with thinness enhances weight-related stigmas and subsequent eating concerns among girls^(11–13). The impact of this socially stereotyped thin body image is largely promoted by the pervasiveness of mass media^(14–17). Additionally, mothers' encouragement towards girls' weight-loss attitudes and mothers' own eating practices^(18–20) and peer influences^(21,22) become the major forces of motivation for adopting weight-reducing eating habits among girls.

The rising incidence of obesity among adolescent girls develops a discrepancy between their body image perception and cultural expectations^(23,24). As a result, overweight and obese girls show greater risk of weight-related physical and psychosocial consequences^(24,25) and adopt a variety of weight-reducing eating habits⁽²⁶⁾. They are more likely to follow unhealthy eating practices (like binging, skipping meals, starving for the whole day, use of laxatives and diet pills) rather than healthy eating practices (like consumption of nutritious foods, reduction of fat intake)^(27,28). The major public health concern centres on the fact that not only overweight girls but also normal-weight and underweight girls follow unhealthy weight-reducing measures, with a desire to be thin. Misconception about body weight also prevails among them, irrespective of their weight status⁽²⁹⁾.

Concerns about weight and eating practices are also reported for African and Asian adolescents^(30–34). Unhealthy eating attitudes are found to be common among South African schoolgirls of different ethnic backgrounds⁽³⁰⁾. Studies in South Asian countries reveal that

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girls, irrespective of their weight status, follow beauty standards of Western cultures; however, their eating behaviours fail to show significant differences^(31,34).

In India, with the advent of modernisation, eating and weight concerns are increasing alarmingly among urban adolescent girls as a consequence of the rising incidence of body fat, although a plump body shape is preferred in traditional Indian culture. A few studies show that Indian adolescent girls express a milder form of weight dissatisfaction with added extreme fear of fatness⁽³⁵⁾ and subsequently attempt to achieve a slim and trim body shape by following various weight-loss measures^(36–38). Therefore, it seems that unhealthy weight-related behaviours seriously affect their physical and mental abilities at this vulnerable phase of growth⁽³⁹⁾. With this backdrop, the present study aims to examine the associations of body weight and body shape concerns and related behaviours with actual weight status among urban adolescent girls.

Materials and methods

Study area

The present cross-sectional study was conducted in the twin cities of Kolkata and Howrah, districts of West Bengal, located in the eastern part of India.

Study population

Initially, a list of 100 schools for girls within the study area was prepared. Out of these, forty schools were chosen randomly and approached for permission. Only nine (22.5%) schools granted permission to conduct the survey. A total of 1445 girls were enlisted following the complete enumeration method from grades 9 to 12 of those selected nine schools. Of them, 1223 girls were finally selected on the basis of the sole inclusion criterion, i.e. age (14–19 years). Among those (n 222) who could not participate, 20% were outside the age range, while 33% were not present during the time of survey and the rest (37%) did not receive parental consent (Fig. 1). Written informed consent was obtained from the principal of each school and the parent of each participating girl prior to the study,

while verbal assent was obtained from each of the girls participating in the survey. The data were collected during February 2011 to December 2012. Overall study objectives, methods and instruments used were reviewed and approved by the Institutional Review Board of the Indian Statistical Institute.

Data collection

Sociodemographic measures

Data on the age of the girls, education level and occupation type of both parents and monthly household expenditure were collected using a pre-tested schedule.

Anthropometric data and weight status

Height and weight of the adolescent girls were measured by one of the authors (N.S.). Height was measured to the nearest of 0.1 cm using a portable GPM anthropometer and weight was measured to the nearest of 0.1 kg for each participant in light clothing without shoes using a Tanita digital scale (Tanita-TBF-521). BMI was calculated using the formula: $BMI = [\text{weight (kg)}] / [\text{height (m)}]^2$. Calculated BMI was translated into an age- and sex-specific BMI Z-score using the cut-off points based on reference data from the WHO⁽⁴⁰⁾. Girls were categorised as underweight/thin (BMI-for-age Z-score < -2), normal weight (BMI-for-age Z-score of -2 to 1), overweight (BMI-for-age Z-score of 1 to 2) and obese (BMI-for-age Z-score > 2). The few obese girls (with BMI-for-age Z-score > 2) were combined with overweight girls to make the 'overweight group'.

Measures of body weight and body shape concerns and related behaviours

Body weight and body shape concerns and related behaviours were assessed with a self-administered questionnaire, adapted and slightly modified from the questionnaires used in other studies^(27,32,41). The original version of the questionnaire was in English. Since Bengali is the vernacular language of the study population, it was translated into Bengali and back-translated into English for validation by professional translators. This self-administered questionnaire included twenty-two questions, each with dichotomous response choices (Table 1).

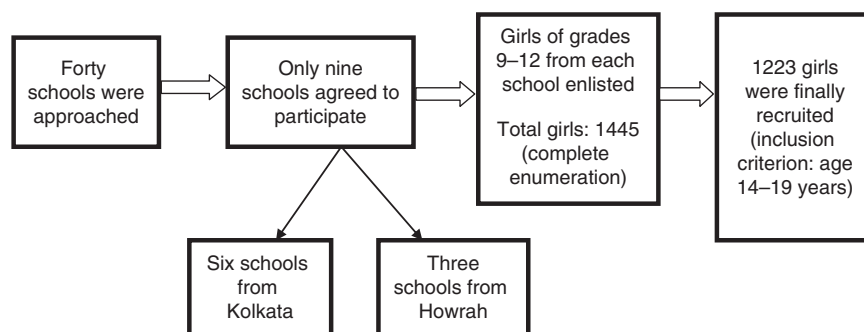


Fig. 1 Flowchart showing the enrolment of girls in the present study

Table 1 Body weight and body shape concerns and related behaviours

Question
Body weight perception
Perceive yourself as underweight (yes/no)
Perceive yourself as normal weight (yes/no)
Perceive yourself as overweight (yes/no)
Body weight dissatisfaction (yes/no)
Body shape perception
Perceive as thin (yes/no)
Perceive as fat (yes/no)
Worry about
Being thin (yes/no)
Being fat (yes/no)
Attempt to lose weight (yes/no)
Attempt to gain weight (yes/no)
Use of weight-loss measures
Eating fewer foods than required (yes/no)
Exercise vigorously (yes/no)
Skipping meals (yes/no)
Fasting (yes/no)
Using food supplements (yes/no)
Reducing fat intake (yes/no)
Eating more fruits and vegetables (yes/no)
Use of weight-gain measures
Eating larger portions of foods (yes/no)
Exercise moderately (yes/no)
Eating more meals in a day (yes/no)
Using food supplements (yes/no)
Eating more fatty foods (yes/no)

Data analysis

Data were analysed using the statistical software package IBM SPSS Statistics for Windows, version 20. Descriptive statistics (frequency and percentage) were computed to understand the trends in sociodemographic profile of the participating girls. The χ^2 test was used to show the association of actual weight status with each of the variables considered for body weight and body shape concerns and related behaviours. Multivariate binary logistic regression (stepwise) was carried out for each of the variables designed for body weight and body shape concerns and its related behaviours to show the association with actual weight status of the girls after adjusting for the effects of sociodemographic variables. Actual weight status of the girls and other sociodemographic variables (age of the girls, education level and occupation type of both parents, monthly household expenditure) were included as covariates in each model. Each of the variables considered for body weight and body shape concerns and related behaviours was incorporated as a dependent variable for each separate model. However, several weight-loss measures (eating more fruits and vegetables, reducing fat intake, fasting, using food supplements) and only one weight-gain measure (eating more fatty foods) were not used as dependent variables as their response rate was low. Before performing regression analyses, a multiple imputation method was applied to replace the missing values in the sociodemographic variables (education level

and occupation type of both parents, monthly household expenditure). Each of the sociodemographic variables (except age of the girls) was converted into dummy variables. A P value of ≤ 0.05 was considered statistically significant and only significant predictor variables are presented with odds ratio and 95% confidence interval. Weighted κ with 95% confidence interval was calculated to understand the degree of agreement between perception and self-categorization of weight status. A κ of 0.41–0.60 indicates ‘moderate’ agreement⁽⁴²⁾. Sensitivity and specificity of self-judgement of overweight status against actual weight status were also measured. The Kuder Richardson index-20 was calculated to judge the reliability of the questionnaire and the tested value was 0.73, which indicated that the test result proved to be acceptable.

Results

Sociodemographic profile

The study initially included 1445 girls from a wide range of sociodemographic profiles. The total response rate was 84.6%. Table 2 portrays the sociodemographic profile of the girls. Most of the girls were aged between 14 and 15 years (52.3%) and belonged to a family with monthly household expenditure of Rs 8000–20 000 (43.4%). Parents’ attained education was mostly below the graduation level (fathers, 50.3%; mothers, 62.5%). More than 80% of mothers were home makers and fathers were mostly (65.6%) in service.

Body weight and body shape concerns and actual weight status of girls

Table 3 shows that most of the girls perceived their weight status in accordance with their actual weight status, although exceptions were also noticed. For example, 39.7% of underweight girls misperceived themselves as of normal weight; 1.3% of underweight girls and 10.7% of normal-weight girls misperceived themselves as overweight. Most of the overweight girls were found to be dissatisfied with their present weight status. However, a substantial proportion of normal-weight and underweight girls were found to be happy with their actual weight status. Actual weight status showed significant associations with body weight and body shape perception, body weight dissatisfaction and distress regarding body shape. A high percentage (78.8%) of overweight girls perceived themselves as fat and also expressed distress (74.6%) regarding their fatness. Additionally, several normal-weight girls (29.5%) and a few underweight girls (3.8%) failed to show proper perception regarding their body shape. They inaccurately reported themselves as fat. More than 30% of normal-weight girls and 10.3% of underweight girls also expressed fear of becoming fat.

Table 2 Sociodemographic profile of the adolescent girls, Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Sociodemographic variable	<i>n</i>		<i>%</i>	
Age group (years) (<i>n</i> 1223)				
14–15	639		52.3	
16–17	452		37.0	
18–19	132		10.7	
Monthly household expenditure (Rs) (<i>n</i> 737)				
<8000	312		42.3	
8000–20 000	320		43.4	
>20 000	105		14.2	
	Father (<i>n</i> 853)		Mother (<i>n</i> 876)	
Education level of parents	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Below graduate	429	50.3	548	62.5
Graduate	346	40.5	273	31.2
Above graduate	78	9.1	55	6.3
	Father (<i>n</i> 883)		Mother (<i>n</i> 1167)	
Occupation type of parents	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Home maker	–	–	1013	86.8
Service	579	65.6	110	9.4
Professional	51	5.7	14	1.2
Business	231	26.2	18	1.5
Others	22	2.5*	12	1.1†

Rs, Indian rupees.

*Others: private tutor, pension holder.

†Others: maid servant, private tutor.

Table 3 Body weight and body shape concerns according to actual weight status among the adolescent girls (*n* 1223), Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Body weight and body shape concerns	Actual weight status (based on BMI-for-age Z-score)						χ^2 <i>P</i> value
	Underweight (<i>n</i> 78)		Normal weight (<i>n</i> 787)		Overweight (<i>n</i> 358)		
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	
Body weight perception							
Underweight	46	59.0	121	15.4	4	1.1	463.92
Normal weight	31	39.7	582	74.0	143	39.9	<i>P</i> < 0.001
Overweight	1	1.3	84	10.7	211	58.9	
Body weight dissatisfaction							
No	63	80.8	700	88.9	192	53.6	179.68
Yes	15	19.2	87	11.1	166	46.4	<i>P</i> < 0.001
Body shape perception							
Thin	64	82.1	378	48.0	38	10.6	275.54
Fat	3	3.8	232	29.5	282	78.8	<i>P</i> < 0.001
Worry about							
Being thin	43	55.1	128	16.3	9	2.5	178.77
Being fat	8	10.3	247	31.4	267	74.6	<i>P</i> < 0.001

Body weight- and body shape-related behaviours and actual weight status of girls

Body weight- and body shape-related behaviours of the adolescent girls with respect to their actual weight status are documented in Table 4. The majority of overweight and normal-weight girls were found to engage in weight-reducing activities. However, underweight girls mostly attempted to gain weight. Girls followed several measures to lose weight, which could be categorised as both healthy and unhealthy. Healthy measures, such as vigorous physical exercise, consumption of fruits and vegetables and reduced fat intake, were followed by 3.8% of underweight, 17.9% of

normal-weight and 39.9% of overweight girls. Similarly, unhealthy measures, such as fasting, eating fewer foods than required, skipping meals and using food supplements, were found to be adopted by 5.1% of underweight, 29.4% of normal-weight and 69.8% of overweight girls. On the other hand, underweight girls mostly followed healthy weight-gain measures such as eating larger portions of foods (51.3%), moderate physical exercise (9.0%), eating more meals in a day (11.5%) and use of food supplements (16.7%). Girls attempted to gain weight mostly by eating larger portions of foods. Physical exercise was the least adopted healthy activity among them.

Table 4 Body weight- and body shape-related behaviours according to actual weight status among the adolescent girls (*n* 1223), Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Body weight- and body shape-related behaviours	Actual weight status (based on BMI-for-age-Z score)						χ^2 P value
	Underweight (<i>n</i> 78)		Normal weight (<i>n</i> 787)		Overweight (<i>n</i> 358)		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Attempt to							
Lose weight	4	5.1	246	31.3	269	75.1	217.58
Gain weight	44	56.4	159	20.2	3	0.8	<i>P</i> < 0.001
Weight-loss measures							
Healthy measures							
Exercise vigorously	3	3.8	132	16.8	133	37.2	
Eating more fruits and vegetables	–	–	6	0.8	6	0.02	
Reducing fat intake	–	–	3	0.4	4	0.01	0.26
Unhealthy measures							<i>P</i> = 0.876
Eating fewer foods than required	3	3.8	193	24.5	208	58.1	
Fasting	–	–	5	0.6	4	1.1	
Skipping meals	1	1.3	30	3.8	33	9.2	
Using food supplements	–	–	4	0.5	5	1.4	
Weight-gain measures							
Healthy measures							
Eating larger portions of foods	40	51.3	126	16.0	5	1.4	
Exercise moderately	7	9.0	22	2.8	2	0.6	
Eating more meals in a day	9	11.5	39	5.0	1	0.3	
Using food supplements	13	16.7	46	5.8	1	0.3	
Unhealthy measures							–*
Eating more fatty foods	–	–	2	0.3	–	–	

*The χ^2 test was not performed due to the presence of two cells with zero value in the variable considered for unhealthy measures.

Multivariate analyses

In Table 5, results of multivariate binary logistic regression analyses (stepwise) reveal that after adjusting for socio-demographic factors, actual weight status of the girls significantly predicted all of the variables considered for body weight and body shape concerns. As compared with normal-weight girls, overweight girls were more likely to perceive themselves as overweight and fat, be dissatisfied with body weight and express fear of becoming fat. Similarly, the likelihood of showing concerns over body weight and shape was significantly higher for underweight girls compared with their normal-weight counterparts. Weight-related behaviours of the girls were found to be significantly predicted by their actual weight status after adjusting for the effects of sociodemographic factors (Table 6). The association between actual weight status and unhealthy eating practices was significant. Overweight girls were more likely to report weight-reducing attitudes and to follow several weight-loss measures. Underweight girls tended to follow several weight-gain measures. This relationship remained statistically significant in multivariate analysis.

Agreement between actual and perceived body weight status of girls

A weighted κ value of 0.52 in Table 7 indicates that there was moderate agreement between actual and perceived body weight status of the girls. We also examined the sensitivity and specificity of self-judgement of overweight status against actual weight status. The sensitivity was

moderately high, indicating that actual overweight girls (58.9%) truly judged themselves as overweight. The specificity value was remarkably higher, indicating that more than 90% of non-overweight girls correctly identified their weight status. With moderate sensitivity and high specificity value, the test result proved to be good.

Discussion

The present cross-sectional study attempts to evaluate the associations of body weight and body shape concerns and related behaviours among a group of urban adolescent girls with their actual weight status. The present findings suggest that body weight and body shape concerns and related behaviours are largely associated with the actual weight status of these girls. Overweight girls are more likely to report use of several weight-loss strategies along with the prime concerns over body weight and shape compared with their normal-weight and underweight counterparts.

The number of overweight girls in both developed and developing countries is increasing steadily^(43–45). Consequently, an urge to be thin following several weight-reducing practices has become an increasing trend among overweight youth^(38,46). These weight-reducing behaviours sometimes involve the use of several unhealthy measures^(29,46). In our study, concerns over body weight and shape and the practice of weight-related behaviours are prevalent among overweight girls. Less than three-fifths of

Table 5 Multivariate binary logistic regression analyses (stepwise) using each of the variables considered for body weight and body shape concerns as a dependent variable; adolescent girls (*n* 1223), Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Dependent variable(s)	Predictor variable(s)	OR	<i>P</i> value	95 % CI for OR	
				Lower	Upper
Perceived as underweight	Actual weight status				
	Normal weight	Ref.			
	Underweight	7.72	< 0.001	4.71	12.65
	Overweight	0.06	< 0.001	0.02	0.17
Perceived as normal weight	Monthly household expenditure (Rs)				
	<8000	Ref.			
	>20 000	0.43	0.019	0.21	0.87
Perceived as overweight	Actual weight status				
	Normal weight	Ref.			
	Underweight	0.22	< 0.001	0.13	0.36
	Overweight	0.22	< 0.001	0.17	0.29
	Age of girls	0.87	0.004	0.80	0.95
	Occupation type of mother				
Body weight dissatisfaction	Others*	Ref.			
	Business	0.36	0.028	0.15	0.89
	Actual weight status				
	Normal weight	Ref.			
	Underweight	0.10	0.024	0.01	0.73
	Overweight	12.99	< 0.001	9.45	17.86
Perceived body shape as thin	Age of girls	1.17	0.004	1.05	1.31
	Occupation type of mother				
	Others*	Ref.			
	Business	3.42	0.018	1.23	9.52
	Actual weight status				
	Normal weight	Ref.			
Perceived body shape as fat	Underweight	1.89	0.039	1.03	3.48
	Overweight	7.37	< 0.001	5.40	10.04
	Age of girls	1.18	0.002	1.06	1.31
	Education level of mother				
	Below graduate	Ref.			
	Above graduate	0.43	0.004	0.24	0.77
Worried about being thin	Occupation type of father				
	Others†	Ref.			
	Service	1.29	0.048	1.00	1.67
	Actual weight status				
	Normal weight	Ref.			
	Underweight	0.08	< 0.001	0.02	0.27
Worried about being fat	Overweight	9.29	< 0.001	6.87	12.54
	Education level of father				
	Below graduate	Ref.			
	Above graduate	0.63	0.044	0.40	0.98
	Occupation type of mother				
	Others*	Ref.			
Worried about being thin	Business	4.48	0.003	1.63	12.28
	Actual weight status				
	Normal weight	Ref.			
	Underweight	6.93	< 0.001	4.20	11.42
	Overweight	0.14	< 0.001	0.07	0.28
	Age of girls	1.23	0.001	1.09	1.38
Worried about being fat	Education level of father				
	Below graduate	Ref.			
	Graduate	0.51	0.001	0.34	0.74
	Actual weight status				
	Normal weight	Ref.			
	Underweight	0.24	< 0.001	0.11	0.52
Worried about being fat	Overweight	6.62	< 0.001	4.97	8.83
	Education level of father				
	Below graduate	Ref.			
	Graduate	0.71	0.015	0.54	0.93
	Occupation type of mother				
	Others*	Ref.			
Worried about being fat	Business	3.57	0.009	1.37	9.31
	Monthly household expenditure (Rs)				
	<8000	Ref.			
>20 000	1.81	0.002	1.25	2.63	

Rs, Indian rupees; Ref., reference category.

*Others: maid servant, private tutor.

†Others: private tutor, pension holder.

Table 6 Multivariate binary logistic regression analyses (stepwise) using each of the variables considered for body weight- and body shape-related behaviours as a dependent variable; adolescent girls (*n* 1223), Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Dependent variable(s)	Predictor variable(s)	OR	<i>P</i> value	95% CI for OR	
				Lower	Upper
Attempt to lose weight	Actual weight status	Ref.			
	Normal weight	0.11	<0.001	0.04	0.32
	Underweight	6.79	<0.001	5.10	9.03
	Overweight				
Attempt to gain weight	Occupation type of father	Ref.			
	Others*	0.77	0.046	0.59	0.99
Weight-loss measures	Actual weight status	Ref.			
	Normal weight	5.13	<0.001	3.16	8.31
	Underweight	0.03	<0.001	0.01	0.10
	Overweight				
Eating fewer foods than required	Education level of mother	Ref.			
	Below graduate	0.66	0.032	0.45	0.96
Exercise vigorously	Actual weight status	Ref.			
	Normal weight	0.19	0.007	0.06	0.64
	Underweight	2.82	<0.001	2.12	3.76
Skipping meals	Overweight				
	Education level of mother	Ref.			
	Below graduate	1.57	0.002	1.17	2.10
	Graduate				
Weight-gain measures	Actual weight status	Ref.			
	Normal weight	2.85	<0.001	1.70	4.78
	Underweight	1.27	0.008	1.06	1.52
	Overweight				
Eating larger portions of foods	Age of girls	1.27	0.008	1.06	1.52
	Education level of mother	Ref.			
Exercise moderately	Below graduate	3.13	0.002	1.54	6.36
	Graduate				
	Above graduate				
Eating more meals in a day	Actual weight status	Ref.			
	Normal weight	5.54	<0.001	3.41	9.01
	Underweight	0.07	<0.001	0.03	0.18
	Overweight				
Exercise moderately	Age of girls	1.15	0.020	1.02	1.30
	Actual weight status	Ref.			
Eating more meals in a day	Normal weight	3.42	0.006	1.41	8.30
	Underweight	0.19	0.028	0.04	0.83
	Overweight				
Eating more meals in a day	Actual weight status	Ref.			
	Normal weight	2.34	0.030	1.08	5.06
	Underweight	0.05	0.050	0.01	0.42
	Overweight				

Ref., reference category.
*Others: private tutor, pension holder.

Table 7 Estimated sensitivity, specificity and weighted κ for agreement between body weight perception and actual weight status of adolescent girls (*n* 1223), Kolkata and Howrah, West Bengal, India, February 2011–December 2012

Perceived weight status	Sensitivity (%)	Specificity (%)	Weighted κ	95% CI
Underweight (<i>n</i> 78)				
Normal weight (<i>n</i> 787)	90.17	58.93	0.52	0.47, 0.56
Overweight (<i>n</i> 358)				

overweight girls rightly perceive themselves as overweight and the rest mostly misperceive themselves as normal weight. A large number of overweight girls express

dissatisfaction with body weight and shape. Earlier studies show that rates of adopting weight-reducing strategies are high among overweight girls compared with their

non-overweight counterparts^(38,46). These findings are consistent with our results. It could be an indication of either their perception of being normal weight or their perceived hopelessness towards weight reduction. These overweight girls are mostly engaged in unhealthy eating practices of reducing body weight other than physical exercise. A combination of these, i.e. healthy food habits and adequate physical exercise, would have been an ideal measure of weight reduction for them.

Our study shows that most of the normal-weight girls perceive their weight status accurately, although a few of them express dissatisfaction with body weight. They are more concerned about fat body shape rather than body weight. In order to reduce body weight, this group is also shown to follow more unhealthy measures (in terms of foods and activities) than healthy ones. Therefore, it seems that normal-weight girls are motivated to achieve a thin body shape and they decide to follow harmful steps towards the goal. One longitudinal study in the USA shows that improper eating behaviours are positively associated with rapid weight gain instead of weight loss⁽⁴⁷⁾. Interestingly, weight-related misconception is found to be common among the girls who are actually underweight. These girls perceive themselves to be of normal weight, but a few remain distressed with body shape. Incidentally, this group of underweight girls is mostly shown to follow healthy weight-gain measures, although a few of them are engaged in unhealthy eating practices.

Strengths of the present study include a large study population that allows more generalisation and contributes to the current body of literature. Anthropometric measurements on height and weight for each girl account for another study strength. Self-reported behaviours including use of both weight-loss and weight-gain measures show variability of the data. The data on body weight and body shape concerns and related behaviours from a unique study group with varied sociodemographic characteristics possibly add a dimension to look into the issue. One of the limitations of the study is its cross-sectional nature that fails to study the effects of change over time in the concerns and behaviours related to body weight and body shape for the same individual. In addition, adolescents may distort their weight concerns and behaviours by either under-reporting or over-reporting.

Conclusion

It is evident from the present study that Indian adolescent girls are involved in the whirlpool of body weight- and shape-related dilemmas following their Western counterparts. To achieve the desired weight status and body shape they often are caught in the web of ignorance and myths and subsequently develop unhealthy eating practices. Adoption of several weight-reduction behaviours by adolescent girls becomes matter of concern when merely

out of fear of getting obese; both normal-weight and underweight girls follow this path. Therefore, the potential threats of both long-term and short-term outcomes of unhealthy eating behaviours demand serious attention for adolescent girls. Findings suggest that health education programmes should be adopted by schools to promote strategies on appropriate weight-control practices that help dispel the myths about weight loss.

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