

INTERNATIONAL ARTICLE

Adolescents' Perception of Body Weight and Parents' Weight for Height Status

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Purpose: To obtain data on the relationships between weight for height status, in adolescents and their parents, and adolescents' perceptions of body image and weight-loss behavior.

Methods: Weight and height were measured in both parents and adolescents from 213 families with an adolescent child aged 14-15 years who were participating in a community-based study of risk factors for coronary heart disease in Geelong, Australia. Information on adolescents' perceptions of body image, desired weight, and weight loss behaviors was obtained by questionnaire.

Results: Forty-one percent of the girls and 14% of the boys considered themselves overweight while 18% of both boys and girls were in this category on the basis of their body mass index (BMI). Most boys tended to see themselves as of normal weight while only girls below the 10th centile for BMI consistently rated themselves as normal. Adolescents who rated themselves as slim had parents whose BMI was significantly lower than that of the parents of adolescents who rated themselves as overweight. A significant proportion of adolescent girls (69%) and boys (27%) had at some time tried to lose weight. Female, but not male, adolescents of normal BMI who had tried to lose weight were themselves heavier and had significantly heavier mothers, but not fathers, than those in the normal range for BMI who had not attempted to do so. Adolescents who perceived an advantage in gaining weight had significantly shorter and lighter, but not leaner, fathers than those

who perceived an advantage in losing weight. Only individuals below the 10th centile for BMI appeared to be content with their weight. On average the weight desired by girls and boys in the normal range for BMI was 6.6 and 2.0 kg less than their actual weight, while their desired height was 8.0 and 12.8 cm more than their actual height.

Conclusions: The findings confirm gender differences in perceptions of and attitudes to body weight and body build. They also provide evidence for an association between adolescents' perceptions of body weight and parents' weight for height status and suggest that the size of the "gap" between desired and actual weight is associated with the prevalence of weight-loss behavior.

KEY WORDS:

Adolescence
Body image
Weight
Body mass index
Weight loss

Introduction

Thinness is portrayed as the ideal of beauty, especially for the female, in today's western society. Numerous studies have documented that girls are more concerned than boys about looking attractive (1,2) and that adolescents, especially females, wish to change their weight or appearance, and want to look slender (3,4) whereas males in this age group are less dissatisfied with their bodies (5) and equally concerned about underweight and overweight (6). Adolescents' perception and evaluation of body weight is likely to be affected both by socioeconomic and cultural influences as well as by their perception of parental and peer attitudes concerning obe-

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sity (7). Parents' actual weight for height status may also be an important influence on adolescents' attitudes toward their weight but this possibility does not appear to have been explored. In this paper we report data, obtained from a sample of Australian adolescents aged 14–15 years, on perceptions of body weight, desired weight, and height and views on weight gain and loss and explore how these relate to their parents' weight for height status.

Methods

The data presented are part of a prospective study of the determinants of risk factors for coronary heart disease and fatness in early life, which included a questionnaire about health and life style, as well as a physical examination by a physician. Families with an adolescent aged 14–15 years were recruited from all secondary schools in the urban area of Geelong, a regional center of approximately 150,000 people 80 km southwest of Melbourne, Victoria, Australia (8). The sample consisted of 213 adolescents, 190 mothers, and 135 fathers from 213 families. The 213 families constituted a 1 in 6 sample of families of adolescents of this age attending schools in Geelong. The average age of the adolescents was 14.9 (SD, 0.2) years, 44.8 (SD, 5.9) years for the fathers and 41.8 (SD, 5.3) years for the mothers. The families studied were generally representative of the population of Geelong, although more study fathers than would be expected had a university degree or diploma. The project was approved by the Deakin University Ethics Committee and the Victorian State Department of Education. Data collection was carried out between July 1987 and March 1988.

The questionnaire completed by the adolescents before the physical examination included the following questions about their perceptions of their own body weight and their views on weight gain and loss:

- How do you see yourself?
- Slim - Normal - Overweight
- Have you ever tried to alter your weight?
- Yes - No
- What do you think would be the main advantage if you were to GAIN or LOSE weight? (Delete the word which does not apply to you)
- Feel better - Look better
- My health would improve - No advantage
- What would you like your weight/height to be?

Those adolescents who had attempted at some

time either to lose or gain weight were also asked to state which of the diet and/or exercise options listed in Table 3 they had used in order to do so. These options specifically did not include extreme dietary measures and purging since eating disorders were not the primary focus of the study. Repeat questionnaires completed after an interval of 6 months, by 20 adolescents, gave 100% agreement for all sociodemographic questions and 85–95% agreement for most other questions, including those relating to weight and weight loss.

Both parents and adolescents were examined and measured by the same pediatrician (P.T.). Weight (WT) was measured in a swimming costume or hospital gown to the nearest 0.1 kg using a digital platform scale (Soehnle) and height (HT) to the nearest 0.1 cm with a Harpenden anthropometer. Body mass index (BMI) was calculated as kilograms per meter squared of height. As no population-based data for BMI are currently available for Australian adolescents, for the purpose of this study, the U.S. National Health and Nutrition Examination Survey (NHANES) data for BMI were used to categorize adolescents as overweight or as slim if they were above the 90th and below the 10th centile, respectively (9).

Results

Self-Rating of Body Weight

Table 1 gives the mean and standard deviation (SD) for weight, height, and body mass index of the adolescents and their parents according to the adolescent's self-rating of his/her body weight. Forty-one percent of the girls and 14% of the boys considered themselves overweight while only 14% of boys and 10% of girls considered themselves as being slim. As a group adolescents who rated themselves as slim were significantly lighter, but not shorter than those who rated themselves as normal or overweight [$F(2) = 14.52, p < 0.001$]. Adolescents who considered themselves slim also had a significantly lower BMI than those who considered themselves normal or overweight [$F(2) = 37.97, p < 0.001$]. These findings were similar when boys and girls were considered separately (Table 1). As a group adolescents who considered themselves as slim had mothers and fathers with a BMI that was significantly lower than that of the parents of adolescents who considered themselves to be overweight [$F = 3.92(2)$ and $3.36(2)$, respectively, $p < 0.05$].

Table 1. Weight, Height, and Body Mass Index (BMI) of the Adolescents and Their Parents According to the Adolescent's View of His/Her Body Weight

Weight group	n	Weight		Measured Height		BMI	
		Mean	SD	Mean	SD	Mean	SD
Boys							
Slim	14	53.0***	8.9	170.0	10.6	18.2***	1.2
Normal	83	57.6	9.4	167.9	8.6	20.3	2.2
Overweight	16	68.3	13.9	170.1	8.7	23.5	4.0
Girls							
Slim	10	48.2***	4.8	161.6	7.0	18.5***	1.2
Normal	49	52.7	5.7	160.4	5.5	20.5	2.1
Overweight	41	59.1	6.9	161.4	5.3	22.7	2.6
Mothers							
Slim	22	64.9**	13.8	159.9	7.1	25.4*	5.5
Normal	117	63.6	12.7	159.6	6.5	25.0	4.4
Overweight	54	70.8	13.8	161.5	5.5	27.1	5.1
Fathers							
Slim	16	75.1	9.0	173.7	9.2	24.9*	2.7
Normal	82	79.6	11.8	172.9	6.9	26.6	3.2
Overweight	38	81.4	8.2	172.9	5.6	27.2	2.4

Probability of the observed differences within age/sex group by one-way analysis of variance under the null hypothesis: **p* < 0.05, ***p* < 0.01, ****p* < 0.001.

Comparison of Self-Rating with Reference Standards for Measured BMI

In Table 2 individual adolescent's rating of their body weight is cross-classified by their NHANES centile position for measured BMI (9). As indicated by the data in Table 1, there was a highly significant association between an individual's self-rating of body weight and measured BMI in both boys and girls [$\chi^2(4) = 23-26, p < 0.001$]. Of the 61 adolescent girls who had a BMI between the 10 and the 90th centile for age, 5% rated themselves as underweight, 52% rated themselves as normal, and 43% as overweight. In contrast of the 59 adolescent boys who were in the normal range for BMI, 10% rated them-

Table 2. Comparison of Adolescents' View of Their Body Weight with Their Centile Rating Based on Measured BMI for Age and Sex (4)

	Rating based on BMI for age and sex					
	Boys (n = 113)			Girls (n = 100)		
	<10	10-90 centile	>90	<10	10-90 centile	>90
Self-view						
Slim	8	6	0	7	3	0
Normal	23	48	12	12	32	5
Overweight	2	5	9	2	26	13
Total	33	59	21	21	61	18

Boys, $\chi^2(4) = 23, p < 0.001$; girls, $\chi^2(4) = 26, p < 0.001$.

Table 3. Methods for Changing Weight

	Boys (n = 40)		Girls (n = 73)	
	Reduce	Gain	Reduce	Gain
Eating more	—	4	—	2
Eating less	1	—	7	—
Eating more and exercising more	1	—	—	—
Eating more and exercising less	—	2	—	1
Eating less and exercising more	26	—	46	—
Eating less and exercising less	—	—	3	1
Exercising more	3	2	13	—
Exercising less	—	1	—	—
Total	31	9	69	4

selves as underweight, 81% rated themselves as normal, and only 8% as overweight. Adolescent girls of normal weight clearly tended to see themselves as overweight much more frequently than boys.

Approach to Altering Weight

More than half of the adolescents (73 girls and 40 boys) had at some time tried to alter their weight. Of these adolescents, 95% of the girls and 78% of the boys had tried to reduce their weight. The main approach used to reduce weight, by both boys and girls, was a combination of eating less and exercising more (Table 3).

Benefits of Altering Weight

When asked about the perceived benefit of weight gain or loss; 32% of the boys and 15% of the girls said they perceived no advantage in weight change. Of those who saw some advantage in altering their weight 20% of the boys and 8% of the girls commented on the benefits of gaining weight while 48% of the boys and 77% of the girls commented on the benefits of losing weight (Table 4). Looking better was the most widely perceived benefit resulting from weight change (52%), while feeling better was chosen by 31% and an improvement in health by only 17% of the adolescents who perceived a benefit from altering their weight. Overall a slightly higher proportion of girls (56%) than boys (47%) perceived looking better as the benefit associated with weight change.

When parents' weight, height, and BMI were analyzed according to whether the adolescent had attempted to alter his/her weight it was found that those who had done so had significantly heavier mothers (*p* < 0.05), but not fathers, than those who

Table 4. Adolescents' Perceptions of the Benefits of Weight Change

	Boys (n = 113)		Girls (n = 100)	
	n	(%)	n	(%)
Weight gain (23 boys 8 girls)				
Feel better	5	(4)	4	(4)
Look better	16	(14)	2	(2)
My health would improve	2	(2)	2	(2)
Weight loss (54 boys 77 girls)				
Feel better	18	(16)	24	(24)
Look better	20	(18)	46	(46)
My health would improve	16	(14)	7	(7)
Weight change (gain or loss)				
No benefit	36	(32)	15	(15)

had not. This difference was also evident when only parents of adolescents in the normal range for BMI were compared (Table 5). Adolescent girls, but not boys, who had tried to lose weight were themselves significantly heavier ($p < 0.001$) and had significantly heavier mothers ($p < 0.05$), but not fathers, than those who had not attempted to do so. There were no corresponding differences in height. Adolescents who perceived some benefit from gaining weight had fathers who were on average significantly shorter and lighter, but not leaner, than those

Table 5. Comparison of Parental Weight, Height, and BMI in Adolescent Girls and Boys within the Normal Range for BMI Who Had, and Had Not, Tried to Lose Weight

Group	Girls		Boys	
	Tried to lose weight	Not tried to lose weight	Tried to lose weight	Not tried to lose weight
Adolescents				
Number	48	13	17	39
Actual				
Weight (kg)	55.2	50.6**	56.4	58.0
Height (cm)	161.1	159.4	168.0	168.8
Desired				
Weight (kg)	48.1	46.7	53.1	59.6*
Mothers				
Number	47	12	13	37
Weight (kg)	68.7	59.8*	63.4	63.2
Height (cm)	160.5	159.6	161.1	159.7
BMI	26.6	23.4*	24.3	24.7
Fathers				
Number	31	9	9	33
Weight (kg)	81.7	79.5	78.2	80.9
Height (cm)	173.8	170.1	174.2	171.7
BMI	27.0	27.4	25.8	27.4

Probability of observed difference between groups of the same sex under the null hypothesis: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6. Difference between Desired and Actual Weight and Height According to Adolescents' BMI Centile for Actual Weight

	BMI centile		
	<10	10-90	>90
Boys			
Weight (kg)	+0.7	-2.0	-7.2***
Height (cm)	+12.6	+12.8	+16.2
Girls			
Weight (kg)	-0.6	-6.6	-11.4***
Height (cm)	+3.1	+8.0	+11.9*

Probability of observed difference between centile groups under the null hypothesis: * $p < 0.05$, *** $p < 0.001$.

*Desired minus actual.

of adolescents who saw no advantage in gaining weight. There was no difference in the weight or height of the mothers of these two groups of adolescents.

Desired Weight and Height

Table 6 shows the difference between the desired and actual weight and height of adolescents in relation to their centile position for BMI. All boys, irrespective of their BMI centile, wanted to be taller by at least 12 cm, while only those below the 10 centile for BMI wanted to be slightly heavier (1 kg). In the girls the difference between desired and actual weight and height were both related to BMI centile. On average all girls, irrespective of their centile position wanted to be lighter. For those below the 10 centile the difference was less than a kilogram but it was substantial for those in the normal range (6.6 kg) and considerably greater than for boys (2.0 kg) in the same centile range. In contrast, the difference between desired and actual height was generally less for the girls than the boys, although all groups wanted to be taller. About 3 cm for those below the 10 centile and increasing to 12 cm for those above the 90 centile.

Discussion

Gender and Adolescent Body Image

Gender differences in attitudes about appearance and perception of body weight, similar to those observed in this study, have also been reported by others (5, 6, 10, 19). In the present study 41% of the girls but only 14% of the boys rated themselves as overweight while about 18% of both sexes were in fact in this category in terms of their BMI. Thus

many more of the girls than were actually overweight rated themselves as overweight while this was not the case among the boys. This difference in rating was confirmed by the data on "desired" weight and height. On average girls in the normal range for BMI wanted to be 6–7 kg lighter while boys in this range only wanted to be about 2 kg lighter. This difference in expectations about body weight clearly means that girls of this age are much more likely to want to diet. Given the desire for a substantially lower body weight in the majority of girls in this study it was of interest to find that they also wished to be taller. It is possible that being taller is seen by adolescent girls as one way of making their existing body weight more acceptable.

Desire for Change

Many adolescents are not satisfied with their current weight and want to change it. In the present study more than half of the adolescents had at some time tried to alter their weight. This proportion is similar to other studies from Australia and the United States (11–14) that have found that adolescents are often dissatisfied with their current weight. The finding in the present study that almost all of these girls wanted to lose weight is also in agreement with other reports (7, 11, 20) but the high proportion of boys dissatisfied with their weight who wanted to lose weight differs from some earlier reports in which boys in general considered themselves too thin and wished to gain weight while girls considered themselves overweight and expressed a desire to lose weight (15). The considerable proportion of adolescent boys in the present study who wished to lose rather than gain weight may reflect an increase in the proportion of overweight adolescent males and/or an increased awareness by this group of the health risks associated with overweight.

Role of Parental Weight

The finding that female, but not male adolescents in the normal range for BMI, who had at some time tried to lose weight, were themselves heavier and had significantly heavier mothers, but not fathers, than those who had not tried to lose weight is of interest. It indicates first that weight control behavior in female adolescents is related to their own weight and not simply governed by external influences. It also suggests that parents and in particular mothers may have an important role in "initiating"

weight-control behavior in this age group. Our data do not enable us to distinguish between genetic and behavioral influences in this respect, except to say that the obvious difference between male and female adolescents is probably evidence for the latter.

Dieters

Dieting is much more common in girls than boys (10, 16) and the most common reason for going on a diet is dissatisfaction with appearance and body weight. In the present study an obvious reason for the higher proportion of girls than boys who reported having attempted at some time to lose weight was the gender difference in the gap between "desired" and actual body weight in adolescents of normal weight. Moses et al. (17) reported that adolescent girls who were underweight, normal weight, and overweight were dieting to lose weight and reported frequent self-weighing practices and interpreted their data as evidence that fear of obesity and inappropriate eating behaviors are pervasive among adolescent girls regardless of body weight. The data from the present study do not support this view, in that dissatisfaction with weight was clearly related to BMI, even within the normal range, and was greater in those girls who were heavier and had heavier mothers and therefore had greater reason to be dissatisfied. The picture in boys was different and probably reflects gender differences in the reason for losing weight. For example, Dwyer et al. (18) found that the desire to change appearance and become more attractive was the primary reason for female adolescents' dieting behavior whereas boys wanted to improve their physical fitness. This difference is evident also in the present study in which 70% of the girls, but only 34% of the boys, who perceived benefit in losing weight said they would feel or look better (Table 4). It is also consistent with the finding that all but one of the boys who had attempted to lose weight had used exercise as part of the method for doing so (Table 3). It would appear, however, from the present study that Australian adolescent girls now use exercise as frequently as diet as a means of losing weight. This contrasts with the earlier findings of Thomas (15) that the favored method for losing weight in boys is to increase exercise and in girls to restrict dietary intake.

Differences between Overweight and Normal Weight Individuals

Obese adolescents tend to be more concerned about their body weight and image than nonobese adoles-

cents. A study by Wadden et al. (7) in 439 girls aged 15–16 years found that obese girls reported significantly more dissatisfaction ($p < 0.001$) with their weight and figure than did nonobese girls. In the present study, although at the group level self-rating of body weight by adolescents was highly correlated with actual weight and BMI, there were gender differences in the way that overweight and normal weight adolescents rated themselves. Just over half of the overweight boys rated themselves as normal compared with only one-quarter of the overweight girls while less than 10% of normal weight boys but 42% of the girls saw themselves as overweight. Tobin-Richards et al. (6) have also observed that boys value being of normal weight while in girls body satisfaction is negatively correlated with weight.

Conclusions

Our findings highlight the fact that there continue to be important gender differences in attitudes to body weight and weight loss. They also suggest that perceptions of, and attitudes to, body weight in female adolescents are influenced to a greater extent by their own and their mothers' weight than are those of male adolescents. Adolescents of both sexes wanted to be taller and girls of normal weight also wanted to be, on average, 6–7 kg lighter. Given this gap between desired and actual weight in girls of normal weight it is not difficult to see why 73% of the girls in this study had at some time tried to lose weight although over 80% of them were in the normal range for BMI.

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