

# Perceptions of body image among Malaysian male and female adolescents

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## ABSTRACT

**Introduction:** Body image concerns are common among adolescents as they undergo rapid physical growth and body shape changes. Having a distorted body image is a risk factor for the development of disordered eating behaviours and eating disorders. This study was undertaken to investigate body image concerns among Malaysian male and female adolescents aged 11–15 years.

**Methods:** A total of 2,050 adolescents (1,043 males and 1,007 females) with a mean age of 13.1  $\pm$  0.8 years from secondary schools in Kedah and Pulau Pinang were included in the study. Questionnaires were used to collect socioeconomic data and body image indicators.

**Results:** The majority (87 percent) of the adolescents were concerned with their body shape. While the majority of underweight, normal weight and overweight male and female subjects perceived their body weight status correctly according to their body mass index (BMI), a noteworthy proportion in each category misjudged their body weight. About 35.4 percent of the males and 20.5 percent of the females in the underweight category perceived themselves as having a normal weight, while 29.4 percent and 26.7 percent of the overweight males and females respectively also perceived that they had a normal weight. A higher proportion of the females (20 percent) than males (9 percent) with a normal BMI perceived themselves as fat. Most of the male (78–83 percent) and female subjects (69–74 percent) in all the BMI categories desired to be taller than their current height. An appreciable proportion of both the males (41.9 percent) and females (38.2 percent) preferred to remain thin, or even to be thinner (23.7 percent of males and 5.9 percent of females). Females had a significantly higher mean body dissatisfaction score than males, indicating their preference for a slimmer body shape. More males (49.1 percent) preferred a larger body size while more females (58.3 percent) idealised a

smaller body size. Compared to normal weight and underweight subjects, overweight males and females expressed lower confidence and acceptance levels, as well as expressed greater preoccupation with and anxiety over their body weight and shape.

**Conclusion:** As having a distorted body image may lead to negative effects such as unhealthy eating habits and disordered eating behaviours, it is recommended that appropriate educational efforts on body image be incorporated into school health activities for adolescents.

**Keywords:** adolescents, body image, eating habits, school health

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## INTRODUCTION

While it remains debatable at what age in childhood body dissatisfaction first appears, there is no doubt that by adolescence, the capability to evaluate one's body and make comparisons with an ideal is already in place.<sup>(1)</sup> As adolescents experience significant physical changes in their bodies during puberty, they become increasingly concerned with their body shape and parts. For example, males tend to be more concerned with their chest, shoulders and arms, while females are more concerned with their hips, thighs and legs.<sup>(2)</sup> Concerns and a preoccupation with body weight, shape and size eventually contributes to the process of developing their individual image.<sup>(3)</sup> Adolescence is also a period of "external evaluation by others" – being concerned with how others perceive their body weight and shape. Body image may be defined in simple terms as the way a person perceives or thinks about his body and how it looks to others. There is increasing pressure during adolescence for males and females to desire a body shape that conforms to the "ideal", i.e. a thin shape for women and a lean, muscular shape for men.<sup>(4)</sup> These perceived ideal body shapes are reinforced by the mass media and popular cultural icons. Internalisation of body ideals that are perpetuated by the media can be a strong influence on body dissatisfaction, especially among females.<sup>(5)</sup>

In attempting to achieve their ideal body shape,

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**Table 1. Demographics of the study subjects.**

Characteristics	No. (%) of subjects
Gender	
Male	1,043 (50.9)
Female	1,007 (49.1)
Age (years)	
12–13	1,415 (69.0)
14–15	635 (31.0)
Mean and standard deviation	13.1 ± 0.8
Ethnicity	
Malay	1,218 (59.4)
Chinese	562 (27.4)
Indian	270 (13.2)
Parental educational attainment	
Father	(n = 1,992)*
None	40 (2.0)
Primary (≤ 6 years)	541 (27.2)
Secondary (7–11 years)	1,179 (59.2)
College/university	232 (11.7)
Mother	(n = 1,993)*
None	89 (4.5)
Primary (≤ 6 years)	703 (35.3)
Secondary (7–11 years)	1,058 (53.1)
College/university	143 (7.2)
Household income (RM per month)†	(n = 1,819)*
< 1,000	1,393 (76.6)
1,000–3,000	303 (16.7)
> 3,000	123 (6.7)

\* Data is not available for all the subjects. Total no. of subjects = 2,050.

† RM3.40 = USD 1.00 (exchange rate at the time of the study).

adolescents indulge in diet fads and health-compromising behaviours.<sup>(6,7)</sup> Those who engage in dieting might not necessarily be overweight, but may in fact even be underweight.<sup>(8)</sup> Such distorted self-perceptions of the body can lead to inadequate intake of energy and essential nutrients at an age when demands are high, thereby jeopardising growth and development. Studies on body image concentrate on western societies, but there is increasing attention being paid to body image concerns in developing countries. In Malaysia, studies that focus on body image are limited. Females aged 8–9 years have been found to desire a thinner body size and showed body-size dissatisfaction.<sup>(8)</sup> In a study on females aged 13–16 years by Pon et al, overweight females had higher body image misrepresentation and tended to skip meals, compared to those with a normal body weight.<sup>(9)</sup> As for young adults aged 19–30 years, Khor et al found significant correlations between negative feelings pertaining to the physical self and uninhibited eating behaviour.<sup>(10)</sup>

Malaysia typifies a country in nutritional transition, with an increasing overweight problem amidst prevailing under-nutrition and micronutrient deficiency.<sup>(11)</sup> Public health authorities, professional societies as well as the mass media have increasingly directed their attention towards overweight and obesity issues. As body image has an important influence on weight management, this study was

undertaken to investigate perceptions and attitudes toward body image among male and female adolescents.

## METHODS

This cross-sectional study was part of a nationwide project on nutrition, physical activity and body image of Malaysian adolescents. Four universities collaborated on this study, with each covering a specific geographical region for logistical convenience. This report focuses on findings obtained from subjects in the states of Penang and Kedah in Peninsular Malaysia. A total of 185 schools that fulfilled the inclusion criteria, i.e. public schools which are coeducational, multiracial, non-religious and non-residential, were identified. Thus, the subjects were chosen from the mainstream educational system and not from special types of schools. Schools were located in big and small town areas. All students aged between 11 and 16 years in each school were enlisted with the cooperation of the teachers. Students were excluded from the study if they had diet-related illnesses (such as diabetes mellitus and food allergies), heart problems and/or physical disabilities.

A total of 6,555 students were measured for body weight (TANITA weighing scale HD-309, Japan) and height (SECA Body Meter 208, Germany). Body mass index (BMI) was computed and the students were classified as underweight, normal weight or overweight according to the WHO's cut-off points for males and females.<sup>(12)</sup> Within each of the six BMI-by-gender categories, approximately 350 students were randomly selected, with an equal number of males and females. A final sample of 2,050 students gave their consent to participate in the study, and all were included. The subjects were asked to complete a questionnaire that consisted of the following components:

- (1) Body shape concerns consisting of questions on their reasons for concern, role models and sources of advice.
- (2) Body weight perceptions on whether they are very thin to very fat as perceived by the self and others. (Questions on the above two components were developed based on several focus group discussions held prior to the commencement of this study.)
- (3) Body shape perceptions, using a figure-rating scale adapted from Stunkard et al.<sup>(13)</sup> Subjects were asked to select the body shape that they perceived as ideal, healthy, attractive and closest to their current body shape. They were also asked to identify the body shape of the opposite gender that they perceived as attractive. Each figure was given a score ranging from zero for the thinnest shape to 26.0 for the largest figure. Body size dissatisfaction was

**Table II. Distribution of subjects by body mass index and gender.**

Body mass index	No. (%) of male subjects	No. (%) of female subjects	Total no. (%)
Underweight	323 (31.0)	220 (21.8)	543 (26.5)
Normal weight	374 (35.9)	435 (43.2)	809 (39.5)
Overweight	346 (33.2)	352 (35.0)	698 (34.0)
Total no.	1,043 (100)	1,007 (100)	2,050 (100)

**Table III. Body shape concerns according to gender.**

Questions regarding body shape concerns	No. (%) of male subjects	No. (%) of female subjects	Total no. (%) of subjects
Are you concerned with your body shape?	(n = 1,038)	(n = 1,007)	(n = 2,045)
Yes	898 (86.5)	886 (88.0)	1,784 (87.2)
No	140 (13.5)	121 (12.0)	261 (12.8)
Main reasons for concern:	(n = 895)	(n = 882)	(n = 1,777)
To be healthy	661 (73.1)	570 (64.6)	1,231 (71.0)
To gain more self-confidence	134 (15.0)	138 (15.6)	272 (15.3)
To look good	53 (5.9)	153 (17.3)	206 (11.6)
To have more friends	32 (3.2)	12 (1.4)	44 (2.5)
Others	15 (1.7)	9 (1.0)	24 (1.4)
Main source of influence / role model	(n = 891)	(n = 882)	(n = 1,773)
None	294 (33.0)	357 (40.5)	651 (36.7)
Sportsmen/sportswomen	211 (23.7)	31 (3.5)	242 (13.7)
Friends	163 (18.3)	220 (24.9)	283 (16.0)
Artistes/models	72 (8.1)	136 (15.4)	208 (11.7)
Relatives	87 (9.8)	104 (11.8)	191 (10.8)
Teachers	31 (3.5)	14 (1.6)	45 (2.5)
Others	33 (3.7)	20 (2.3)	53 (3.0)
Do you have problems with your body shape?	(n = 1,025)	(n = 999)	(n = 2,024)
Yes	336 (32.8)	456 (45.6)	792 (39.1)
No	689 (67.2)	543 (54.4)	1,232 (60.9)
Do you seek advice?	(n = 336)	(n = 456)	(n = 792)
Yes	248 (73.9)	336 (73.6)	584 (73.7)
No	88 (26.1)	120 (26.4)	208 (26.3)
Sources of advice	(n = 248)	(n = 336)	(n = 584)
Family members only	113 (45.6)	162 (48.1)	276 (47.2)
Friends only	53 (21.5)	55 (16.5)	82 (18.4)
Family members and friends	16 (6.3)	58 (17.3)	70 (13.2)
Professionals	30 (15.2)	13 (3.8)	47 (8.0)
Others	36 (14.4)	48 (14.3)	109 (13.2)

calculated as the difference between the perceived current and ideal body shapes. While a score of zero showed body satisfaction, a negative score indicated a desire to be thinner, and a positive score showed a preference for a bigger body size.

- (4) Attitudes towards body image (28 items) using a five-point scale ranging from “definitely disagree” to “definitely agree”, adapted from the Multidimensional Body Self Relations Questionnaire (MBSRQ).<sup>(44)</sup> There are nine subscales of the instrument that reflect attitudes towards body weight and shape: parental (four items) and peers’ (four items) acceptance of body shape, importance of body shape (two items), body shape confidence (two items) and satisfaction (three items), comparison of body shape with others (three items), body weight satisfaction (two items) and anxiety (four items) and preoccupation with body weight and shape (four items) (Appendix 1). The internal consistency

of the 28 items used in this study was 0.77 with  $\alpha$  Cronbach’s values for the nine subscales in the range of 0.48–0.85.

Data was analysed using the Statistical Package for Social Sciences version 12.0 (SPSS Inc, Chicago, IL, USA). All variables were descriptively presented by gender. Chi-square test was used for associations between BMI and body weight perceptions, while *t*-test and one-way ANOVA were used for mean score differences in body shape perceptions by gender as well as body image attitudes according to BMI status.

## RESULTS

The subjects comprised the three main ethnic groups in Malaysia, and their proportions in the study approximately reflect the ethnic ratio in the general population (Table I). Two-thirds of the subjects were aged 12.0–13.9 years, and the overall average age and standard deviation was 13.1  $\pm$  0.8 years. The majority were from families earning a low to

**Table IV. Perception of body weight by self and others among male and female subjects.**

Body weight perception	No. (%) underweight*	No. (%) normal weight*	No. (%) overweight*	Total no.
<b>Males</b>				
• I feel I am:†	(n = 322)	(n = 368)	(n = 344)	(n = 1,034)
Very thin	25 (7.8)	9 (2.4)	0	34 (3.3)
Thin	178 (55.3)	76 (20.7)	2 (0.6)	256 (24.8)
Normal	114 (35.4)	250 (67.9)	101 (29.4)	465 (45.0)
Fat	5 (1.6)	31 (8.4)	226 (65.7)	262 (25.3)
Very fat	0	2 (0.5)	15 (4.4)	17 (1.6)
• Others think I am:‡	(n = 317)	(n = 364)	(n = 339)	(n = 1,020)
Very thin	72 (22.7)	20 (5.5)	0	92 (9.0)
Thin	161 (50.8)	103 (28.3)	5 (1.5)	269 (26.4)
Normal	80 (25.2)	193 (53.0)	103 (30.4)	376 (36.9)
Fat	4 (1.3)	46 (12.6)	193 (56.9)	243 (23.8)
Very fat	0	2 (0.5)	38 (11.2)	40 (3.9)
<b>Females</b>				
• I feel I am:§	(n = 219)	(n = 431)	(n = 348)	(n = 998)
Very thin	28 (12.8)	15 (3.5)	0	43 (4.3)
Thin	145 (66.2)	94 (21.8)	4 (1.1)	243 (24.4)
Normal	45 (20.5)	237 (55.0)	93 (26.7)	375 (37.6)
Fat	1 (0.5)	85 (19.7)	221 (63.5)	307 (30.8)
Very fat	0	0	30 (8.6)	30 (3.0)
• Others think I am:¶	(n = 218)	(n = 425)	(n = 349)	(n = 992)
Very thin	82 (37.6)	36 (8.5)	2 (0.6)	120 (12.1)
Thin	112 (51.4)	112 (26.4)	4 (1.1)	228 (23.0)
Normal	22 (10.1)	214 (50.4)	95 (27.2)	331 (33.4)
Fat	2 (0.9)	62 (14.6)	207 (59.3)	271 (27.3)
Very fat	0	1 (0.2)	41 (11.7)	42 (4.2)

\* Body mass index classification. Some subjects did not answer all the questions.

† $\chi^2 = 662.98$ ; ‡ $\chi^2 = 606.35$ ; § $\chi^2 = 610.25$ ; ¶ $\chi^2 = 670.77$ ; df = 8, p < 0.000

medium income, with most parents having attained at least a secondary level of education. Based on the BMI status, about one-quarter of the subjects were underweight, while another one-third were overweight (Table II). Less than 40% of the students had a normal weight status. There was a higher percentage of underweight (31.0%) males compared to females (21.8%). The percentage of overweight students was similar for males (33.2%) and females (35.0%).

The reason given by the majority of the adolescents (71.0%) for being concerned with their body shape was “to be healthy” (Table III). Other reasons given were “to gain more self-confidence” (15.3%) and “to look good” (11.6%). More of the female (17.3%) than male subjects (5.9%) attached importance to the latter reason. While more than a third stated that no specific individual exerted any influence on their body shape concerns, a considerable percentage of the males identified sportsmen (23.7%) and friends (18.3%) as “idols”, while for the females, friends (24.9%), artistes/models (15.4%) and relatives (11.8%) were considered as important sources of influence. When asked if they experienced problems with their body shape, more females (45.6%) than males (32.8%) answered positively. An encouraging finding is that almost three-quarters of these subjects said they sought advice for their body shape problems. Advice was sought from family members only (45.6% of the males and 48.1% of the females), followed by friends only (21.5% males and 16.5% females).

The majority of the male subjects in the underweight, normal weight and overweight BMI categories correctly perceived themselves as thin, normal or fat, respectively. (Table IV). Likewise, when asked for their perceptions of how other people viewed their body weight, more than half in each BMI category gave the correct answers. However, there was an appreciable proportion in each category that seemed to misjudge their own body weight. About 35% in the underweight category and almost 30% in the overweight category felt that they had a normal weight. Similarly, about 25% and 30% in the underweight and overweight categories, respectively, felt that others thought they had a normal body weight. In contrast, there were normal weight male subjects who deemed themselves as thin (21%) or fat (9%) and also thought that others perceived them as thin (28%) or fat (13%).

Like the male subjects, the majority of the females in each BMI category correctly answered the self-perceived body weight questions. However, a sizeable percentage of the underweight (20.5%) and overweight (26.7%) females incorrectly considered themselves as having a normal body weight (Table IV). There are noticeable differences between the genders in that a higher percentage of the underweight males perceived themselves as having a normal weight (35%) or felt that others thought they had a normal weight (25%), compared to 21% and 11% among the underweight females, respectively. In addition, a higher percentage of

**Table V. Desired height and weight among male and female subjects according to BMI.**

Desired height and weight	No. (%) underweight*	No. (%) normal weight*	No. (%) overweight*	Total no.
<b>Males</b>				
• I want my height to be: <sup>†</sup>	(n = 323)	(n = 371)	(n = 344)	(n = 1,038)
Shorter	4 (1.2)	4 (1.1)	8 (2.3)	16 (1.5)
Status quo	66 (20.4)	67 (18.1)	49 (14.2)	182 (17.5)
Taller	253 (78.3)	300 (80.9)	287 (83.4)	840 (80.9)
• I want my weight to be: <sup>‡</sup>	(n = 322)	(n = 371)	(n = 344)	(n = 1,037)
Lighter	22 (23.7)	88 (23.7)	264 (76.7)	374 (36.1)
Status quo	135 (41.9)	181 (48.8)	65 (18.9)	381 (36.7)
Heavier	165 (51.2)	102 (27.5)	15 (4.4)	282 (27.2)
<b>Females</b>				
• I want my height to be: <sup>§</sup>	(n = 220)	(n = 434)	(n = 351)	(n = 1,005)
Shorter	5 (2.3)	12 (2.8)	4 (1.1)	21 (2.1)
Status quo	63 (28.6)	122 (28.1)	87 (24.8)	272 (27.1)
Taller	152 (69.1)	300 (69.1)	260 (74.1)	712 (70.9)
• I want my weight to be: <sup>¶</sup>	(n = 220)	(n = 35)	(n = 351)	(n = 1,006)
Lighter	13 (5.9)	206 (47.4)	318 (90.6)	537 (53.4)
Status quo	84 (38.2)	167 (38.4)	24 (6.8)	275 (27.3)
Heavier	123 (12.2)	62 (14.3)	9 (2.6)	194 (19.3)

\* Body mass index classification. Some subjects did not answer all the questions.

<sup>†</sup> $\chi^2 = 6.35$ ,  $df = 4$ , not significant

<sup>‡</sup> $\chi^2 = 431.08$ ,  $df = 4$ ,  $p < 0.000$

<sup>§</sup> $\chi^2 = 4.32$ ,  $df = 4$ , not significant

<sup>¶</sup> $\chi^2 = 479.41$ ,  $df = 4$ ,  $p < 0.000$

normal weight females (20%) than normal weight males (9%) perceived themselves as fat.

Overall, most (78.3%) of the male subjects expressed a desire to be taller than their current height, regardless of BMI status (Table V). As for the desired weight, while more than half of the underweight males would have liked to be heavier than their current weight, nearly 42% seemed to prefer to stay at their current weight (i.e. underweight), and almost 24% even desired to be lighter. This finding corresponds with the results in Table IV, where 35.4% of the underweight males perceived themselves as having a normal weight, and a few even deemed themselves to be fat. The majority (69.1%) of the female subjects shared the same desire as the males in wanting to be taller than their current height (Table V). Most of the overweight females (90.6%) desired to be lighter than their present weight. In contrast, only a small percentage of the underweight female subjects wished to be heavier (12.2%). A noteworthy percentage of the underweight females (38.2%) liked their current thin status, and 5.9% indicated that they wanted to be even lighter.

Based on Stunkard et al's figure rating scale,<sup>(13)</sup> the male subjects considered a bigger body shape than their self-perceived current body shape to be healthy, ideal and attractive (Table VI). In contrast, the females considered a smaller figure than their current body shape to be ideal and attractive. Compared to males, females chose significantly ( $p < 0.05$ ) smaller ideal, healthy and attractive body shapes. Similarly, for an ideal body size perception, the male subjects chose one that was bigger for females than

the one preferred by the females themselves ( $10.45 \pm 3.11$  vs.  $8.54 \pm 3.00$ ). In contrast, the females appeared to consider a smaller body size as attractive for males than the one selected by the males themselves ( $11.13 \pm 3.25$  vs.  $14.21 \pm 3.77$ ). Female subjects expressed a significantly higher level of body dissatisfaction ( $2.30 \pm 4.95$ ) compared to the males ( $-0.29 \pm 5.57$ ). While a significantly higher percentage ( $p < 0.05$ ) of female subjects idealised a smaller body size (58.3%), a higher percentage of the male subjects (49.1%) desired a larger body size.

Overweight male subjects expressed significantly lower parental but higher peer acceptance for their body shapes compared to those who had a normal weight or were underweight ( $p < 0.05$ ) (Table VII). Overweight males also had significantly less confidence and satisfaction with their body shapes and weight, compared to those with a normal weight. In addition, they experienced significantly higher levels of anxiety and preoccupation with body weight and shape. Compared to normal weight subjects, underweight male subjects also expressed significantly greater preoccupation with body weight and shape. Like their male counterparts, overweight female subjects also expressed significantly lower parental and peer acceptance of their body shapes compared to the normal weight and underweight adolescents (Table VII). They tended to make significantly more comparisons of their body shape with others, showed greater body weight and shape dissatisfaction and had higher levels of anxiety and preoccupation with their body weight and shape. A finding of concern is that, not only the overweight females but

**Table VI. Perception of body shape based on the modified Figure Rating Scale of Stunkard et al.\***

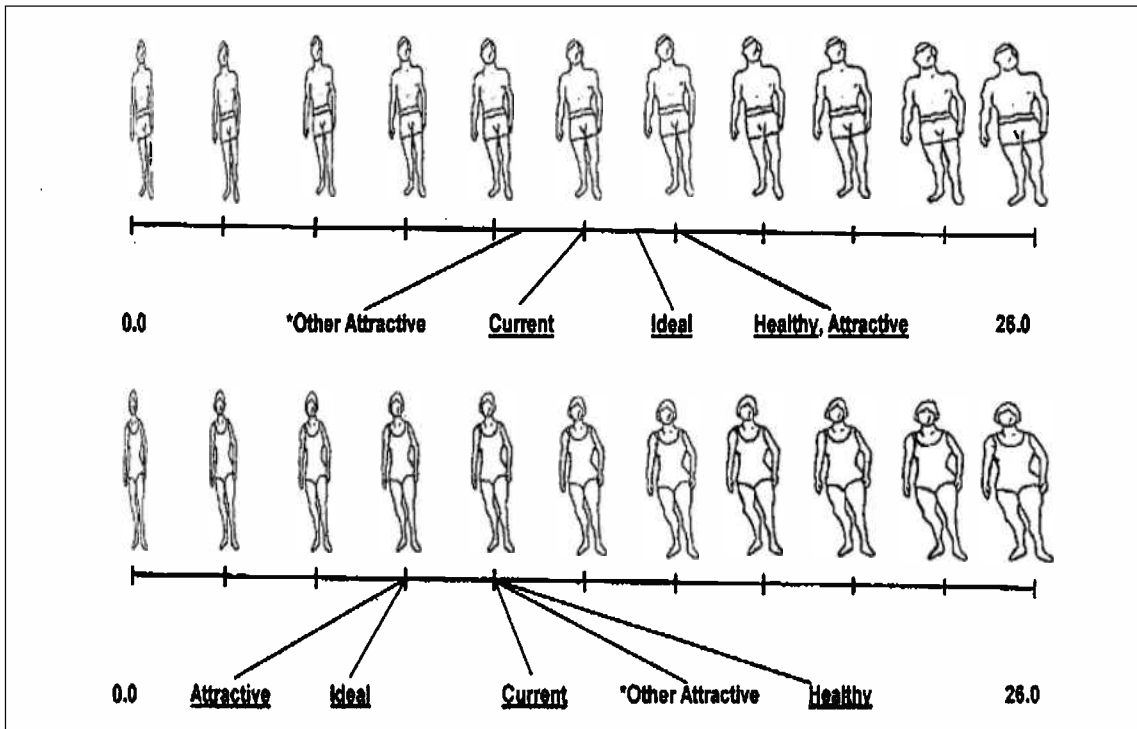
Body shape	Male		Female	
	Mean ± SD	Median	Mean ± SD	Median
Current body shape	13.92 ± 5.60	13.00	10.85 ± 5.67†	10.40
Ideal body shape	14.21 ± 3.77	14.20	8.54 ± 3.00†	7.80
Healthy body shape	15.97 ± 4.38	15.60	11.54 ± 4.29†	10.40
Attractive body shape	14.75 ± 4.00	15.60	8.49 ± 3.35†	7.80
Attractive body shape of the opposite sex	10.45 ± 3.11	10.40	11.13 ± 3.25†	10.40
Body dissatisfaction	-0.29 ± 5.57	0.00	2.30 ± 4.95†	2.60
Score of -26.0 to -1 (desired a bigger body size)‡	509 (49.1)		312 (31.0)	
Score of 0 (satisfied with current body size)‡	100 (9.7)		108 (10.7)	
Score of +1 to +26 (desired a thinner body size)‡	427 (41.2)		587 (58.3)	

\*The modified Figure Rating Scale of Stunkard et al.<sup>(13)</sup> is shown in Fig. 1.

† Significantly different ( $p < 0.05$ ) between male and female adolescents.

‡ Data is expressed as no. (%).

Body dissatisfaction = current body size – ideal body size.



**Fig. 1** Selection of body shape according to gender, based on the modified figure rating scale of Stunkard et al. (1983).

also the normal weight females were significantly more dissatisfied with and anxious over their body weight and shape when compared to all normal weight subjects.

**DISCUSSION**

The majority of both male and female adolescents were concerned with their body shape. This finding is consistent with other studies, which have also found adolescents to be concerned and preoccupied with their body image.<sup>(6,7,15)</sup> While both male and female adolescents in this study expressed concerns about body image, more females

stated that they encountered body shape problems. Being overweight in adolescence appears to be an important factor associated with body image problems. Both males and females experienced significantly higher levels of anxiety and preoccupation with body weight and shape, compared to the normal weight subjects. While the overweight males said they experienced lower parental acceptance of their body shape, overweight females also expressed lower peer acceptance of their body shape.

The majority of the adolescents selected “to be healthy” as the reason for their body shape concerns. About one

**Table VII. Attitudes towards body image among male and female subjects according to BMI category.**

Subscales for attitude	Underweight		Normal weight		Overweight		Total	
	Males (n = 322)	Females (n = 218)	Males (n = 366)	Females (n = 430)	Males (n = 342)	Females (n = 347)	Males (n = 1,030)	Females (n = 995)
Parental acceptance	9.8 ± 3.9 <sup>a</sup>	9.7 ± 3.7 <sup>a</sup>	9.4 ± 4.1 <sup>b</sup>	9.1 ± 3.7 <sup>b</sup>	10.7 ± 4.4 <sup>a,b</sup>	11.6 ± 4.4 <sup>a,b</sup>	9.9 ± 4.2	10.1 ± 4.1
Peer acceptance	9.0 ± 3.0 <sup>a</sup>	8.8 ± 3.0 <sup>a</sup>	9.1 ± 3.2 <sup>b</sup>	8.5 ± 3.2 <sup>b</sup>	8.0 ± 3.6 <sup>a,b</sup>	10.0 ± 3.6 <sup>a,b</sup>	9.1 ± 3.4	9.1 ± 3.4
Importance of body shape	10.0 ± 2.9	9.7 ± 2.7 <sup>a,c</sup>	9.7 ± 2.9	10.3 ± 2.9 <sup>b,c</sup>	9.8 ± 2.8	10.6 ± 2.8 <sup>a,b</sup>	9.8 ± 2.9	10.3 ± 2.8
Comparison of body shape	10.0 ± 2.9	9.7 ± 2.7 <sup>a</sup>	9.7 ± 2.9	10.3 ± 2.9 <sup>b</sup>	9.8 ± 2.8	10.6 ± 2.8 <sup>a,b</sup>	9.8 ± 2.9	10.3 ± 2.8
Body shape confidence	6.0 ± 1.8 <sup>a</sup>	6.5 ± 1.7 <sup>a</sup>	5.9 ± 1.7 <sup>b</sup>	6.5 ± 1.6 <sup>b</sup>	6.3 ± 1.8 <sup>a,b</sup>	7.1 ± 1.7 <sup>a,b</sup>	6.1 ± 1.8	6.7 ± 1.7
Body shape satisfaction	9.0 ± 2.5 <sup>a</sup>	8.8 ± 2.3 <sup>a</sup>	9.3 ± 2.3 <sup>b</sup>	8.2 ± 2.3 <sup>b</sup>	7.7 ± 2.6 <sup>a,b</sup>	6.9 ± 2.4 <sup>a,b</sup>	8.7 ± 2.6	7.9 ± 2.4
Body weight satisfaction	5.9 ± 1.7	5.5 ± 1.6 <sup>a</sup>	6.1 ± 1.6 <sup>b</sup>	5.5 ± 1.7 <sup>a</sup>	5.7 ± 1.6 <sup>b</sup>	5.2 ± 1.5 <sup>b</sup>	5.9 ± 1.6	5.4 ± 1.6
Body weight and shape anxiety	12.8 ± 3.3 <sup>a</sup>	12.8 ± 3.0 <sup>a,c</sup>	12.4 ± 3.3 <sup>b</sup>	14.1 ± 3.4 <sup>b,c</sup>	13.9 ± 3.5 <sup>a,b</sup>	14.9 ± 3.4 <sup>a,b</sup>	12.9 ± 3.4	14.1 ± 3.4
Body weight and shape preoccupation	13.5 ± 4.0 <sup>a,c</sup>	12.7 ± 3.8 <sup>a</sup>	12.1 ± 4.0 <sup>b,c</sup>	12.6 ± 3.8 <sup>b</sup>	15.3 ± 3.8 <sup>a,b</sup>	16.3 ± 3.3 <sup>a,b</sup>	13.5 ± 4.2	13.9 ± 4.0

Data is expressed as mean ± standard deviation.

<sup>a,b,c</sup> The same superscript denotes a significant difference ( $p < 0.05$ ) among the underweight, normal weight and overweight categories.

A higher score for each subscale indicates less parental and peer acceptance, greater body shape importance, higher body shape comparison, lower body shape confidence, higher body shape and body weight satisfaction, more body weight and shape anxiety and preoccupation.

quarter of the male adolescents chose sportsmen as their role models for body shape, presumably because sportsmen are perceived as healthy and muscular. Past studies found that male adolescents tend to select large and muscular figures as their ideal body shape.<sup>(16)</sup> In comparison, the female adolescents were more likely to select slim singers and actresses as their role models, indicating that the females tend to have a preference for slim body shapes. Such findings are not unexpected and have been reported previously among adolescents in western countries.<sup>(17,18)</sup> Females tend to be more appearance-orientated and less fitness-oriented than males.

In this study, BMI is used as an objective indicator of the adolescent's overall body weight against the subjective assessment by the adolescent of his own body weight. A major limitation in the use of the BMI is that it does not differentiate between muscle and fat mass. Thus, a muscular subject, such as a body builder, may have a similar BMI to an obese person. However, this is not a significant factor in the context of this study on adolescent students. While the majority of the subjects in the underweight, normal weight and overweight BMI categories correctly perceived themselves as thin, normal or fat, respectively, a smaller proportion of the females among the underweight subjects perceived themselves as having a normal weight (20.5%), compared to the males (35.4%). This is in contrast to other studies, that found that more females judged themselves to be of average weight or fat when they were, in fact, underweight.<sup>(1,4)</sup> In this study, two-thirds of the subjects were 12–13 years of age, and by this age, a considerable proportion of the females would have attained menarche and experienced body shape changes. Thus, one would have expected the females to be as aware as, if not more so than, the males on issues of body image. More studies

should be conducted to obtain a better understanding of gender differences in body image development among Malaysian adolescents.

In relation to the desire for an ideal body shape, the male adolescents selected a larger figure than their current body shape as ideal, healthy and attractive, while the females chose a smaller figure than their current body shape as ideal and attractive. Thus, while the males preferred a stronger and more muscular body shape, the females showed a preference for a slim body shape; this is consistent with the findings of several other studies.<sup>(19-21)</sup> The female ideal is to be thin with slim lower body parts while the male ideal is to gain weight to achieve a V-shaped body and additional muscles.<sup>(4,22)</sup> A preoccupation with body image is especially acute during puberty.<sup>(23)</sup> Compared to their male counterparts, females tend to be more dissatisfied with their body image throughout puberty.<sup>(24,25)</sup> The dissatisfaction in females may arise from an increase in body fat, which is in conflict with the pursuit of a thin ideal.<sup>(26)</sup> In contrast, puberty is associated with an increase in lean body mass for males, and this muscle gain may contribute to males being generally more satisfied with their physical appearance.<sup>(27)</sup>

In relation to differing perceptions of the ideal body shape, females and males tend to pursue opposite strategies in shaping their physical looks. While females who are not satisfied with their body are more likely to adopt strategies in order to lose weight, male adolescents are more likely to pursue strategies to increase their body weight and muscle mass.<sup>(28,29)</sup> In this study, family members, followed by friends, were found to be the main sources of advice concerning body shape problems. It is an encouraging finding that Malaysian adolescents can look to their families for support regarding a sensitive matter such as body weight and shape. Several other studies have also reported the

important roles played by parents and peers in influencing changes in body image among adolescents.<sup>(30,31)</sup> Mothers appear to exert greater influence than fathers on their children's body weight and shape development.<sup>(32)</sup> Such findings have implications for promoting positive body image programmes among adolescents where parents may be actively involved.

In conclusion, this study found that adolescents in Malaysia are concerned with their body image. A significant proportion of adolescents are not satisfied with their body weight, leading to them having a poor body image. Owing to the negative effects that a distorted body image can cause, such as unhealthy eating habits or disordered eating behaviours, the results of the present study indicate that appropriate education and counselling should be conducted among adolescents in schools. Separate intervention programmes for male and female adolescents are required to address body image concerns, as they have differing expectations and reactions about their body shape and size. More studies should be conducted to obtain a better understanding of gender differences in body image development among Malaysian children and adolescents.

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**APPENDIX I. Questions on attitudes towards body image adapted from the MBSRQ.<sup>(14)</sup>**

1. Overall, my body shape is not attractive.
2. I feel comfortable when I see my body shape in the mirror.
3. I do not feel comfortable when others look at my body .
4. I avoid social activities because of my body shape.
5. I do not take part in sports because I feel ashamed when friends look at my body.
6. I am proud of my body shape.
7. My body shape is not important to me.
8. I attach importance to comments from others about my body shape.
9. When I see a mirror, I will look at myself in the mirror.
10. I am always comparing my body shape with that of my peers.
11. I always pay attention to my body shape.
12. I feel my mother does not like my body shape now.
13. I feel my father does not like my body shape now.
14. My mother often gives negative comments about my body shape.
15. My father often gives negative comments about my body shape.
16. I feel my mother wants me to change my body shape.
17. I feel my father wants me to change my body shape.
18. My peers said my body shape is not attractive.
19. My peers like to tease my about my body shape.
20. I feel my peers do not like me because of my body shape.
21. I have difficulty making friends because of my unattractive body shape.
22. Whenever I have the opportunity, I weigh myself.
23. I always feel anxious when my body weight increases.
24. I always exercise in order to take care of my body shape.
25. I do not worry when I become fat.
26. I am sensitive to changes in my body weight.
27. I wish to change my body weight.
28. I am not satisfied with my body weight.