Body image dissatisfaction and its determinants in urban Sri Lankan adolescents

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(Index words: body mass index, body dissatisfaction, body image, perception, body size, Sri Lanka)

Abstract

Background: Body image dissatisfaction is a significant public health issue, particularly among adolescents. We investigated the prevalence of body image dissatisfaction in urban Sri Lankan adolescents and its determinants.

Methods: A descriptive cross-sectional study examined the body image dissatisfaction among urban adolescents of 15-16 years old in one educational zone in the Colombo district. Perceived current body size and body size ideals were assessed based on the Stunkard Figure Rating Scale (SFRS). Body mass index (BMI) was categorized according to WHO 2007 growth references. Univariate and multivariate analysis was performed to examine the correlates of body image dissatisfaction. Independent variables were BMI, waist to height ratio, gender, socioeconomic status, and ethnicity.

Results: Overall, most (73.5%) were not satisfied with their body image. More males (79%) than female (69%) adolescents were dissatisfied. Among the dissatisfied, 66% of males desired larger body size, and 57% of females preferred a thinner size. Overweight/obese adolescents had four times greater body image dissatisfaction, and underweight adolescents had three times greater dissatisfaction when compared to students with normal BMI when adjusted for gender. (OR: 4.18, CI: 1.209,14.416, p=0.02 and OR: 3.2, CI: 1.073,9.852, p=0.04). Males had higher odds of dissatisfaction than females (OR: 1.9. CI: 1.020,3.407, p=0.04).

Conclusions: Most adolescents were dissatisfied with their body image. Overweight/obesity and underweight were significant determinants of dissatisfaction when adjusted for gender. Also, males had a greater risk of having dissatisfaction than females. It informs that further research is required using more rigorous scientific methods to clarify these findings further.

Introduction

Body image dissatisfaction (BID) is a significant public health issue, particularly among adolescents. In addition, dissatisfaction is linked to dysfunctional eating behaviors such as anorexia nervosa, bulimia nervosa, and binge-eating disorder [1-3]. Thus, understanding the patterns and determinants of body image dissatisfaction has a potential role in the prevention and treatment of unhealthy eating behavior and weight-related problems [4,5].

Much research has been conducted on body image satisfaction and its correlates; however, results are diverse and inconsistent. For example, Makinen *et al.* observed that body dissatisfaction was related to overweight/obese and not underweight in males [6]. Except for BMI, many lifestyle behaviours did not associate with body dissatisfaction among Saudi females ≥ 16 years of age, attending fitness centres [7]. Recent studies had reported regional differences (rural vs. urban) in body image dissatisfaction [8]. It appears that effect of many other factors such as socioeconomic position and gender are still unclear [9, 10,11]. In a study among Sri Lankan rural adolescents, males had poor satisfaction compared to females [10]. On the other hand, Omori *et al.* failed to demonstrate a gender difference in dissatisfaction among Sri Lankan urban adolescents [11]. With this background, to increase the understanding of body image dissatisfaction and its determinants among urban adolescents, we conducted a cross-sectional, school-based study in the Colombo South educational zone in Sri Lanka.

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Materials and methods

Study design, setting, and sampling procedure

A descriptive cross-sectional study was conducted among 245 adolescents in Colombo South educational zone in Sri Lanka from May to August 2019. They were aged 15 to 16 years, from schools in an urban area. Sample size calculation was done based on a previous study, with a 5% significance level [12]. The calculation was adjusted for a cluster effect of 1.5 and a non-response rate of 10%. There are 31 state-run schools in the Colombo South educational zone. Adolescents were recruited using two-stage cluster sampling. The schools were categorized into boys', girls' and mixed. In the first stage, two schools from each category were randomly selected using a random number table. Subsequently, one class from each grade for the respective age category was selected from all six schools.

Study instruments

A self-administered questionnaire was used. The first section of the questionnaire obtained socio-demographic details (gender and age of the participants, fathers' occupational category, and ethnicity). The second section carried the previously validated Stunkard Figure Rating Scale (SFRS) [13]. It included nine silhouettes numbered from 1 (extreme underweight) to 9 (severely obese). Also, it had the following questions. "Which figure is closest to your usual appearance?" and "Which figure would you like to look like?" Each of the figures corresponded to a previously established BMI; underweight (1 and 2), normal weight (3 and 4), and overweight/obese (5 and above) [13, 14]. The questionnaire was translated to Sinhalese and Tamil languages and then back translated to refine. Differences were discussed and resolved. The content validity of the questionnaire was assessed by three experts in the medical and nutrition field.

Definitions

BMI for age was categorised according to WHO 2007 growth references (thin < -2SD, normal -2SD to +1SD and overweight > +1SD to ≤ 2SD and obese > 2SD) [12]. For WHtR, 0.5 was considered as the cut-off (≥0.5 indicated central obesity) [15]. Father's occupation was categorized according to skill level using International Labour Organisation (ILO) criteria: skill level 1 (low), skill level 2 (medium), and skill levels 3 and 4 (high) [16]. The body discrepancy score: the difference between the chosen silhouettes for perceived current body size (PCBS) and body size ideals (BSI) was used to express body image dissatisfaction. The difference was either positive or negative (-8 to +8). Positive values showed their desire to lose weight (want to be thinner), whereas negative values showed their desire to gain more weight (want to be larger). Higher numerical values indicated higher dissatisfaction with their body image. When the difference was zero, it was considered that the student was satisfied with the current body image.

Data collection procedure

All the students in each selected class were invited to participate in the study. The research objectives were clearly explained (verbal and written). The consent of the parents and students' assent was obtained before recruiting them as research participants. Parents filled up the first section of the questionnaire (socio-demographic details). Subsequently, the students responded to the second section of the questionnaire.

Then, anthropometric data were obtained. Height and weight were measured according to the World Health Organisation (WHO) standard operating protocol (WHO 2007 [17]. Height was recorded to the nearest 0.1 cm and weight to the nearest 0.1 kg.

The study agrees to the standards outlined in the declaration of Helsinki. Ethical and administrative clearances were obtained from the Ethics Review Committee of the University of Sri Jayewardenepura [CHS/25/2017] and School authorities. The potential participants were explained about the objectives and data collection process in simple language and informed consent was obtained prior to recruitment in to the study.

Statistical analysis

Data were entered and analyzed using SPSS Version 16. Normality was checked with kurtosis, skewness, and scatter plots. Data points that were outliers were removed. For comparisons of categorical variables, the Chi-squared test was used. Bivariate correlation analysis was done to examine the association between perceived current body size (interval variable) and BMI (continuous variable). Simple logistic regression analysis was used to examine the determinants of dissatisfaction. Independent variables were gender, father's occupation (socioeconomic status proxy variable), ethnicity as per prior knowledge [10,18]. All variables with a p-value less than 0.1 were included in multivariate regression analysis.

Results

Socio-demographic and anthropometric data

A total of 245 school children participated in the study. The response rate was 89%. Reasons for exclusion were refusal to participate, missing anthropometric measurements, and incomplete questionnaires. The anthropometry and socio-demography of the study sample as a function of gender are given in Table 1. Most were females (53.9%). The mean BMI was 20.41 kg/m^2 for males and 19.92 kg/m^2 for females. The majority (75%) were in the normal BMI range. A difference in BMI categories between males and females was not observed [χ^2=2.316, df=2. p=0.31]. Most perceived Stunkard figures 3 and 4 as their current body size (49.4%). A significant correlation was observed between perceived body size and actual BMI (r= 0.742, p<0.001).

Table 1. Scio-demographic characteristics, anthropometry, and differences in body dissatisfaction

Characteristics	Males (n=113)	Females (n=132)
Ethnicity		
Sinhalese	66 (58.4)	80 (60.6)
Tamil	21 (18.6)	41 (31,1)
Muslim	26 (23)	11 (8.3)
Father's occupation (by skill level)		
High	80 (70.8)	27 (15.9)
Medium	24 (21,2)	77 (58.3)
Low	07 (6.2)	23
Unemployed	01 (0.8)	02
Divorced/not alive	02 (1.8)	02
Body mass index		
Underweight	10	20
Normal	87	96
Overweight/obese	16	16
Body image satisfaction		
Satisfied	24 (21.2)	41 (31.1)
Want to be thinner*	30 (26.6)	52 (39.4)
Want to be bigger*	59 (52.2)	39 (29.5)

*Denominator for percentage calculation is number of dissatisfied males/females

Table 2. Univariate regression results with predictors of body dissatisfaction

	Coefficient B	95.0% C.I. for B		P-value
		Lower	Upper	
Gender				
Female	Ref			
Male	1.7	0.957	3.106	0.07
Father's occupation (Skill category)				
High	Ref			
Low	1.2	0.448	3.316	0.69
Medium	0.7	0.372	1.274	0.24
Ethnicity				
Sinhalese	Ref			
Tamil	1.1	0.536	2.084	0.87
Muslim	0.9	0.404	2.080	0.83
BMI				
Normal	Ref			
Underweight	2.9	0.981	8.818	0.06
Overweight/obese	4.1	1.186	13.973	0.03

Body image dissatisfaction (BID)

Overall, 73.5% were dissatisfied with their body image. More males than females were dissatisfied (78.7% vs. 68.9%, p=0.083). Among the dissatisfied, more males wanted to be larger (66.3%), whereas more females wanted to be thinner (57.2%). A higher proportion of overweight/ obese (87.5%) or underweight (86.7%) adolescents were more dissatisfied than normal-weight adolescents (69%). Thirty-nine percent of the normal-weight adolescents wanted to be larger, and 31% wanted to be thinner. Most of the 54% of males with normal weight desired larger body sizes. Conversely, 38.5% of females with normal BMI preferred a thinner image.

Table 3. Multivariate regression model with predictors of body dissatisfaction

| | Coefficient B | 95.0% C.I. for B | | P-value |
		Lower	Upper	
Gender (Males)	1.9	1.020	3.407	0.04
BMI				
Normal	Ref			
Underweight	3.3	1.073	9.852	0.04
Obese/overweight	4.2	1.209	14.416	0.02

Log-likelihood-ratio=265.87, Nagelkerke R2 = 0.084, X2 = 14.33, p=0.002. Abbreviations: BMI - body mass index

Univariate logistic regression showed that overweight/obesity was a significant determinant of body dissatisfaction. However, gender, father's occupation, ethnicity, underweight, and body size estimation were not significant predictors (Table 2). Variables with a p-value of <0.1 were considered for multivariate logistic regression (gender and BMI). With multivariate regression, gender became a significant correlate when adjusted for BMI; males had nearly two times greater dissatisfaction than females. Also, underweight, and obese/overweight categories were significant predictors when adjusted (Table 3). Overweight/obese had four times greater body image dissatisfaction and underweight three times greater dissatisfaction when compared to students of normal BMI.

We examined the mediator effect of gender on BMI by carrying out regression analysis with the interaction variable. The results showed that the impact of gender as a mediator was not significant (OR: -0.02, 95% CI: 0.677, 1.423, p=0.92). Therefore, interaction variable was not included in the final regression model.

Discussion

This study adds important insights to body image satisfaction among adolescents in an urban setting. Most adolescents were dissatisfied. Among them, BMI was a significant predictor of dissatisfaction. Many studies in the literature support this notion. For example, Fernandez-Bustos et al. reported that BMI is a key variable when determining body dissatisfaction among 652 adolescents (296 male and 356 female) aged 12-17 years [19]. Interestingly, most normal-weight adolescents were dissatisfied; yet dissatisfaction among underweight and overweight/obese groups was three to four times higher than the normal weight group. In addition, gender was an independent predictor of dissatisfaction; males were dissatisfied twice more than the females. However, gender as a mediator did not impact on the relationship between and BMI and dissatisfaction among adolescents in the present study.

In our study, higher male dissatisfaction was mostly due to males' desire for a larger body image. It is sensible to think that mid-adolescent males could have wished for a societal ideal of a male figure with broad shoulders and a muscular body, and in turn have become dissatisfied with their image. Growing adolescent boys may idealize not only the bodies observed in their favourite action figures but also the bodies of adult males who are heavily muscular, falling prey to societal trends [20]. Similar patterns of predominant male dissatisfaction have been demonstrated among rural Sri Lankan adolescents in mid puberty (13.0 to 16.9 years) [10]. One reason for male predominance of dissatisfaction in these Sri Lankan studies could have been the influence of the pubertal age. Compared to early puberty, mid or late puberty may increase the dissatisfaction. This notion is supported by previous research [9]. In a study among 329 adolescents (11 to 15 years), Regnier et al. observed that increasing age from early to mid-puberty, increased their desire for a muscular body [9].

In contrast to the above findings, lower dissatisfaction in males compared to females has been reported previously. In India, a cross-sectional study among 811 adolescents of 13-16 years using the Stunkard scale, girls showed significantly higher dissatisfaction than boys [21]. Omori et al. reported that both genders were equally affected among Sri Lankan urban school children, aged 12-16 years. The study designs and pubertal age could have contributed to the discrepancies. Omori et al. used a six-item body dissatisfaction subscale of the Eating Disorder Inventory to assess dissatisfaction, different to the measure what we used [11]. We enrolled females in mid adolescence (15-16 years), possibly around pubertal stage IV or V. Generally, around this stage, normal female body contours are attained with fat deposition particularly on the breasts and hips. These changes are generally linked to self-worth and satisfaction [22].

In the present study, it is reasonable to assume that the males may have wanted a heavy lean body image than obese body dimensions. Since we used SFRS to assess body image, the delineation between these two aspects were difficult. SFRS measures thinness to obese body dimensions and less about muscularity or lean body mass and considered as a limitation of SFRS [23]. There are

other newer measures of body image. According to a recent systematic review, the Drive for Muscularity Scale (DMS) is a useful measure of muscularity [24]. However, the content validity of the DMS has not been completely supported to be used among different cultures, particularly in non-Western setups.

In the present study, approximately 40% of females desired a thinner body image. However, 30% desired the opposite. Thus, this mixed picture is contrary to what is reported among most Western studies, in which thin idealization is predominant [25]. However, thin idealisation is not uncommon in non-Western culture. A survey conducted among adolescents and adult females in India showed that this idealization was the key factor that mediated the effect of BMI on body dissatisfaction [26]. Yet, in most non-Westernized settings, plumpness is still perceived as the ideal compared to predominant thin idealisation in Western culture [22, 27].

It is important to discuss potential limitations in our study. First, although the Stunkard Figure Rating Scale is a quick and valid measure of body dissatisfaction in males and females from thinness to obesity, one of its limitations is not reflecting muscular or lean body image. Second, we did not assess the stage of puberty, which is a likely confounding factor in the perception and dissatisfaction of body image. Third, we recruited adolescents from an educational area in an urban setting and cannot be generalized to the whole adolescent population in Sri Lanka.

Conclusions

Nearly three-quarters of the adolescents were not satisfied with their current body image. Overweight/obese had four times greater body image dissatisfaction and underweight three times greater satisfaction when compared to normal-weight students, when adjusted for gender. Gender was also a significant determinant, and males had nearly two times greater dissatisfaction than females. It informs that further research is required using more rigorous scientific methods to clarify these findings further.

Authors' contribution

GL: Conceptualization and development of design methodology, proposal writing, data analysis, reviewing and editing the manuscript; TK: Proposal writing, data collection, data analysis, writing the draft of the manuscript; LJ: Proposal writing, data collection; PT: Proposal writing, data collection; MT: Proposal writing, data collection, MS: Conceptualization, proposal writing, data analysis, reviewing and editing the manuscript.

Conflicts of Interest

The authors reported no potential conflict of interest relevant to this article.

Ethics approval

Ethics approval was obtained from Ethics Review Committee of the University of Sri Jayewardenepura [CHS/25/2017].

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