Ethnicity, Body Image Perception and Weight-Related Behaviour among Adolescent Females Attending Secondary School in Trinidad

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ABSTRACT

Objective: *The correlates of body image perception among an ethnically diverse group of adolescent females attending secondary school in Trinidad were investigated.*

Methods: *A cross-sectional survey was carried out among adolescent females from selected secondary schools in Trinidad. Participants completed a self-administered questionnaire consisting of socio-demographic items and standardized psychometric instruments.*

Results*: Two hundred and fifty-one students participated in the survey with an ethnic composition as follows: Indo-Trinidadian (35.9%), Afro-Trinidadian (28.7%), Indo-Afro mixed Trinidadian (21.9%) and other (13.5%). The results suggest that 2.4% of the participants reported having a medical diagnosis for an eating disorder. Indo-Trinidadians had significantly greater body dissatisfaction than Indo-Afro-mixed Trinidadians but not more than Afro-Trinidadians (*$p = 0.04$*). Also, a significantly higher proportion of Indo-Trinidadians engaged in binge eating behaviour compared to the other ethnic groups (*$p < 0.001$*). Afro-Trinidadians were more likely to use vomiting as a mean of weight control compared to Indo- and Indo-Afro-mixed Trinidadian (*$p < 0.05$*). Fifty-one per cent of participants had a negative body image perception. Altered body image perception was associated with a significant higher mean Body Shape Questionnaire BSQ16 score (*$p < 0.001$*) and increased likelihood of reporting being diagnosed with an eating disorder (OR = 2.03, 95% CI: 1.78, 2.31;* $p = 0.01$*) compared to non-altered body image state. Eating Attitude Test (EAT-26) score was positively correlated with Drive-for-Thinness (*$p < 0.001$*) and BSQ16 (*$p < 0.001$*) scores and inversely correlated with the Rosenberg self-esteem score (*$p = 0.012$*).*

Conclusion: *In this group of adolescents, there are ethnic differences in the level of concern over body image and associated eating, and weight-related behaviour.*

Etnicidad, Percepción de la Imagen del Cuerpo y Comportamiento Respecto al Peso Entre las Adolescentes que Asisten a la Escuela Secundaría en Trinidad

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RESUMEN

Objetivo: *Se investigaron los correlatos de la percepción de la imagen del cuerpo entre un grupo étnicamente diverso de adolescentes hembras que asisten a la escuela secundaria en Trinidad.*

Métodos: *Se llevó a cabo un estudio transversal entre las adolescentes de escuelas secundarias seleccionadas en Trinidad. Las participantes completaron un cuestionario autoadministrado consistente en ítems socio-demográficos e instrumentos psicométricos estandarizados.*

Resultados*: Doscientos cincuenta y un estudiantes, con la siguiente composición étnica, participaron en el estudio: indotrinitarias (35.9%), afrotrinitarias (28.7%), indo-afrotrinitarias mixtas (21.9%), y otras (13.5%). Los resultados indican que 2.4% de las participantes reportaron tener un diagnóstico médico de desorden alimentario. Las indotrinitarias presentaron una insatisfacción con sus cuerpos, significativamente más alta que la de las mestizas indo-afrotrinitarias, pero no mayor que la de las afro-trinitarias (*$p = 0.04$*). Por otra parte, una proporción significativamente mayor de indotrinitarias tuvo relación con comportamientos de ingesta compulsiva (atracones), en comparación con los restantes grupos étnicos (*$p < 0.001$*). Las afrotrinitarias eran más propensas a recurrir al vómito como*

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medio de controlar el peso, en comparación con las indotrinitarias y las indo-afrotrinitarias mixtas (p < 0.05). El cincuenta y uno por ciento de las participantes tenían una percepción negativa de la imagen de su cuerpo. La alteración en la percepción de imagen corporal estaba asociada con una puntuación media significativamente más alta en el Cuestionario de la Forma Corporal BSQ16 (p < 0.001), y el aumento de la probabilidad de que el reporte fuera diagnosticado con un trastorno (OR = 2.03, 95% CI: 1.78, 2.31; p = 0.01), en comparación con un estado no alterado de la imagen corporal. La puntuación del Test de Actitud ante la Comida (EAT-26) se correlacionó positivamente con las puntuaciones de la Escala de Obsesión por la Delgadez (p < 0.001) y BSQ16 (p < 0.001), en tanto que se correlacionó inversamente con la puntuación de la Escala de Autoestima de Rosenberg (p = 0.012). ***Conclusión:*** *En este grupo de adolescentes existen diferencias étnicas en el nivel de preocupación por la imagen corporal y el correspondiente comportamiento ante la comida y el peso.*

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INTRODUCTION

Adolescence represents a period of dramatic physical changes that are associated with changes in body image. It is difficult for adolescent females to assimilate these pubertal changes into a positively valued body image, as there is intense concern about attractiveness (*ie* their body image). In addition, females are more likely to aspire to an ideal body size that is smaller than their current size (1). In particular, there is great concern about the size and shape of thighs, buttocks and hips (2, 3). Although it is generally believed body image distortions and their co-morbidities are westernized society phenomena, it is clear that these phenomena are becoming increasingly prevalent in a number of societies spanning diverse cultures (4, 5). Body image is a multidimensional construct broadly describing internal, subjective representations of physical appearance and bodily experiences and includes perceptual and cognitive elements of these internal representations of one's own body and the body of others (4). A negative body image can occur when an individual's perception of himself or herself deviates too greatly from the ideal (5). Thus, negative body image perception might reflect conflict between perception and reality. Body image perception is reinforced and defined by media representations, cultural traditions and attitudes of friends and relatives (6–8). Important risk factors for misperception of body image include gender, personality, race/ethnicity, socio-economic status and other demographics such as age. In addition, negative body image perception is associated with an increased risk of poor eating behaviour, low self-esteem and depression (3, 9–11). Reviews of eating disorder prevalence rates suggest that 90% of eating disorder behaviour occur in women (12). It is this dissatisfaction with one's physical appearance coupled with the societal pressure for thinness as the female phenotypic ideal that predisposes adolescent females to an increased risk of disordered eating and weight-related behaviour (13, 14). Only a few published studies in the English-speaking Caribbean explore issues surrounding body image perception among Caribbean adolescents (15–18). In this study, the authors sought to examine body image perception and its associated factors among adolescent females attending secondary school.

SUBJECTS AND METHODS

Study Sample

Participants were enrolled from fifteen randomly selected government-assisted secondary and senior comprehensive schools in Trinidad as follows: Bishops Anstey High School East, Arima Senior Comprehensive, El Dorado Senior Comprehensive, Lakshmi Girls Hindu College, Malick Senior Comprehensive, Morvant Laventille Secondary, Naparima Girls High School, Siparia Senior Comprehensive, St Joseph's Convent (Port-of-Spain), St Augustine Girls High School, St Francois Girl's College, Success Laventille Composite, Vessigny Government Secondary, Couva Government Secondary and Chaguanas Senior Comprehensive. It was assumed that 20% of the sample would have Eating Attitudes Test (EAT-26) scores consistent with a higher risk of disordered eating behaviour (19). To detect this prevalence with a 5% precision required a minimum of 246 participants. Sixteen females were enrolled from fourth and fifth forms of the selected schools (20). Participation in the study was voluntary. Written informed consent was obtained from each of the participant's parents or guardians prior to participation in the study.

Measurements

Participants completed a questionnaire consisting of socio-demographic items and four standardized questionnaires namely: the Eating Attitudes Test (EAT-26), the Body Shape Questionnaire (BSQ16), the Rosenberg Self-Esteem Scale and the Drive-for-Thinness subscale of the Eating Disorder Inventory–2. Participants completed the self-administered questionnaires during class-time; no consultation with peers was permitted, but an investigator was on site at all times to clarify issues relevant to the questionnaire. The EAT-26 consists of 26 items that measure a broad range of symptoms characteristic of abnormal attitude towards food and eating. The test is scored using a Likert scale with a choice of six answers ranging from `always' to `never' for each of the 26 items. Possible scores on the EAT range from 0 to 78; scores $ 20 are generally considered as indicative of increased risk for disordered eating behaviour (21, 22). The BSQ16 is a 16-

item self-report measure designed to assess negative feelings about one's body size and shape by evaluating the fear of putting on weight, feelings of low self-esteem because of one's appearance, the desire to lose weight and body dissatisfaction. This instrument utilizes a six-point Likert scale with possible scores ranging from 16 to 96. A score of $ 20 reflects body image concerns. The BSQ 16 has been shown to have good concurrent and discriminant validity (23, 24). Body image perception was assessed using a discriminant body silhouette chart consisting of seven silhouettes ranging in morphology from severely underweight to severe obesity. Participants were asked to select the silhouette that they believed was most similar to their current figure as well as the silhouette representing the figure they most desired. The discrepancy between the figures representing their current shapes and ideal shapes represents the degree of altered body image perception. Persons desirous of a body shape that was different from their current perceived body image were classified as having a negative body image. Such scales are simple to use and have shown high degrees of reliability as well as good correlation with objectively measured body mass (6, 16, 25).

The Rosenberg Self-Esteem Scale was used to assess self-esteem. This scale consists of ten items each answerable on a four point Likert scale ranging from strongly agree to strongly disagree with higher total scores representing greater self-esteem (26, 27). The Drive-for-Thinness subscale of the Eating Disorder Inventory-2 consists of nine items and assesses excessive concern with dieting and preoccupation with weight and the fear of gaining weight. Scores $ 14 indicate greater concern with body image (28). Subjects reported both height and weight in inches and pounds respectively (16). Body mass index (BMI) was calculated from reported weights and heights. In addition, participants were asked whether they had ever been diagnosed with an eating disorder as well as issues related to bulimic behaviour (*ie* binge eating and self-induced vomiting after eating). Finally, participants were requested to state their ethnic background. Socio-economic status was indexed by parental occupation, which was categorized into the following groups: Class 1 – professional (*eg* doctor, lawyer, senior management); Class 2 – professional (*eg* middle management, teacher, police officer); Class 3 – skilled technician (*eg* electrician, carpenter); Class 4 – clerical (*eg* clerk, sale representative); Class 5 – semi-skilled/unskilled workers (*eg* labourer in the various unemployed relief programmes *eg* Community-based Environmental Protection Enhancement Programme (CEPEP) and the Unemployment Relief Programme (URP)). All analyses were performed by SPSS 11.0 for Windows.

Statistical analysis

Prior to analyses, BMI, weight, height, age and all summary scores (*ie* EAT-26, BSQ16, Drive-for-Thinness, and the Rosenberg self-esteem score) were checked for deviations from normality. These checks revealed that scores for EAT-26, BSQ16 and Drive-for-Thinness were skewed to the right. Results of the Kolmogorov-Smirnov test showed that all of the above variables were normally distributed. Z-scores were computed for BMI, EATS-26, BSQ16, and Drive-for-Thinness. Parametric Analysis of variance (ANOVA) and non-parametric (the Kruskal-Wallis one-way analysis of variance and Median tests) were used to determine whether there were any differences in variables of interest among the different ethnic groups. Chi-squared tests were used to assess between-group differences in categorical data. Pearson product moment correlation was used to determine associations among EAT-26, BSQ16, self-esteem and Drive-for-Thinness scores.

RESULTS

Table 1 shows the demographic characteristics of participants. Two hundred and fifty-one (251) students, with a mean age 16.3 (SD = 1.4), participated in the survey. The ethnic composition was as follows: Indo-Trinidadian (35.9%), Afro-Trinidadian (28.7%), Indo-Afro mixed-Trinidadian (21.9%) and other (13.5%). Approximately 25% of the sample reported that they had thought about dieting, however only 9% of them were engaged in dieting behaviour. A large proportion of children reported their father's occupation to be Class 2 (middle managers, teachers) and skilled technicians. The majority of mothers were employed in Class 2 and semi-skilled/unskilled occupations.

Table 1: Characteristics of participants

Characteristics	
AGE (years) [mean ± standard deviation]	16.3 ± 1.37
ETHNICITY (%)	
Indo-Trinidadian	35.9
Afro-Trinidadian	28.7
Indo-Afro Trinidadian	21.9
Other	13.5
Mother's Occupation Classes (%)	4.9
Class 1 – Professional (*eg* doctor, lawyer, senior management)	39.0
Class 2 – Professional (*eg* Middle management, teacher, police officer)	11.3
Class 3 – Skilled technician (*eg* electricians, carpenter)	18.5
Class 4 – Clerical Class(*eg* clerks, sales reps)	26.3
Class 5 – Semi-skill/unskilled workers (*eg* CEPEP)	
Father's Occupation Classes (%)	
Class 1 – Professional (*eg* doctor, lawyer, senior management)	12.4
Class 2 – Professional (*eg* middle management, teacher, police officer)	56.3
Class 3 – Skilled Technician (*eg* electricians, carpenter)	23.4
Class 4 – Secretarial Class (*eg* clerks, sales reps)	1.1
Class 5 – Semi-skill/unskilled workers (*eg* CEPEP)	6.8

Table 2 shows body image perception and weight-related behaviour by ethnic group. Overall 2.4% of the participants reported having a medical diagnosis for an eating

Table 2: Perceived anthropometry and weight-related behaviours by ethnic group

	Indo-Trinidadian (1) n = 90	Afro-Trinidadian (2) n = 72	Indo-Afro mixed Trinidadian (3) n =55	Other (4) n = 34	ANOVA *p*-value
Age	16.5 ± 1.1	16.5 ± 1.4	15.9 ± 1.7	15.8 ± 1.1	0.004 (1 > 4)
Height (ins)	63.9 ± 3.7	65.1 ± 4.3	65.9 ± 5.8	64.8 ± 2.8	0.06
Weight (lbs)	113.5 ± 23.0	129.5 ± 22.1	120.7 ± 16.1	113.7 ± 13.3	(0.001) (2 > 1, 4)
Body mass index estimated (kg/m^2) (Mean ± SD)	19.8 ± 4.7	21.7 ± 4.2	20.5 ± 3.9	19.0 ± 2.0	0.014 (2 > 4)
Perceived body weight category (%)					
Underweight	15.9	12.9	17.0	12.5	0.68
Normal weight	73.9	77.1	77.4	87.5	
Overweight and obese	10.2	10.0	5.7	0	
Desired body weight category (%)					
Underweight	20.5	8.6	13.2	12.5	0.12
Normal weight	75.0	82.9	84.9	87.5	
Overweight and obese	4.5	8.6	1.0	0	
Body Shape Dissatisfaction (BSQ16) Score (Mean ± SD)	35.6 ± 16.6	32.3 ± 14.3	28.4 ± 9.0	31.3 ± 13.3	0.04 (1 > 3)
BSQ16 score $ 20 (%)	12.5	10.0	15.1	15.6	0.86
Eating Attitude Test score (EATS-26) (% above median)	52.0	46.3	50.0	48.3	0.93
Eating Attitude Test score (EATS-26) $ 20 (%)	8.0	2.9	0.0	3.1	0.11
Drive-for-Thinness score (% above median)	59.3	47.0	34.7	53.3	0.047 (1 > 3)
Drive-for-Thinness score $ 14(%)	5.7	0.0	1.9	3.1	0.20
Rosenberg Self-Esteem Scale (Mean ± SD)	23.8 ± 2.4	23.7 ± 2.7	24.2 ±2.3	24.5 ± 2.1	0.37

disorder. In addition, 13.8% engaged in binge eating whilst 12.8% and 6.8% used vomiting and laxatives as a means of weight control respectively. Overall, four per cent of the sample had an EAT-26 $ 20. In addition, there were no ethnic differences in the proportions of females with EAT-26 scores $ 20 ($p = 0.11$). Fifty-four per cent of participants with estimated BMI between 18 and 24.9 selected silhouettes with BMIs within this range for their current body sizes while 65% of participants desired silhouettes within this BMI range. Among persons with estimated BMI $ 25, approximately half perceived their figures to be within the normal weight category with one third perceiving themselves as being overweight. Indo-Trinidadian adolescent females had significantly higher BSQ16 scores and were more fearful of gaining weight than their Indo-Afro mixed-Trinidadian but not Afro-Trinidadian counterparts ($p = 0.04$). In analyses of variance utilizing age and estimated BMI as covariates, Indo-Trinidadian adolescent females had significantly higher EAT-26 ($p < 0.05$) than their Afro-Indo mixed counterparts. Results of analyses using the non-parametric equivalent of ANOVA (*ie* the Kruskal-Wallis and Median tests) showed a larger proportion of Indo-Trinidadian adolescent females with Drive-for-Thinness scores above the median (score = 3.0) compared to their Afro-Indo mixed Trinidadian counterparts ($p < 0.05$). In addition, they had significantly higher BSQ16 scores than their Afro- and Afro-Indo mixed counterparts ($p = 0.001$). Afro-Trinidadian adolescent females had significantly higher reported weights than Indo-Trinidadian and other ethnic group counterparts ($p < 0.001$). These findings remain irrespective of the transformation of outcome variables of interest used (*ie* z-scores and logarithmic transformations).

The reported occurrence of binge eating as a means of controlling weight was more prevalent among Indo-Trinidadians ($p = 0.014$) than any of the other ethnic groups (Fig 1). A significantly larger proportion of Afro-Indo mixed

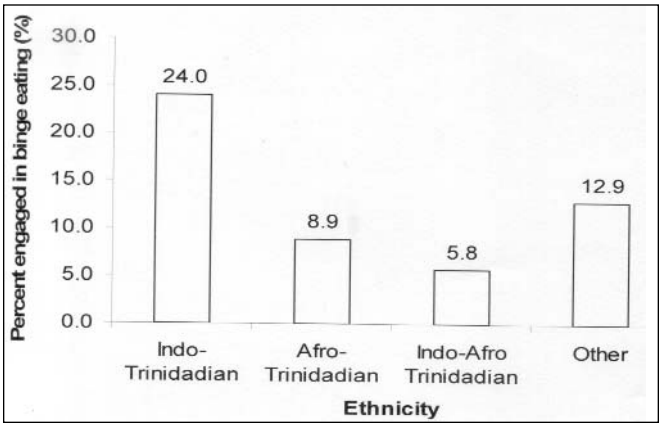

Fig. 1: Proportion of adolescent females engaged in binge eating, by ethnic group.

Trinidadian and Afro-Trinidadian participants induced vomiting as a means of controlling weight than did Indo-Trinidadian counterparts ($p < 0.001$) (Fig. 2). Fifty-one per

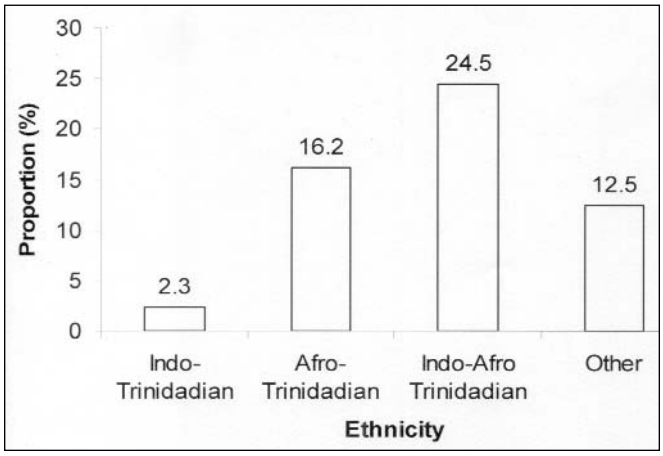

Fig. 2: Proportion of adolescent females who used vomiting as a means of managing weight, by ethnic group.

cent of the sample desired a body figure that was identical to their perceived body image whilst 32.2% and 16.1% desired figures that were thinner or larger than their perceived figures respectively. Participants who desired a smaller body figure had significantly higher body dissatisfaction and drive to thinness scores than those who desired no change and those desiring larger figures ($p < 0.001$). Forty-five per cent of the participants who chose the thinnest silhouettes still expressed the desire to be even thinner compared to 13% of the girls whose perception of body image was within the healthy BMI range.

Perceived body size was positively correlated with estimated BMI ($r = 0.44$, $p < 0.001$). In addition, perceived body size was positively correlated with BSQ16 ($r = 0.23$, $p < 0.001$) and Drive-for-Thinness score ($r = 0.17$, $p = 0.008$). Desired body size was inversely associated with BSQ16 ($r = -0.22$, $p = 0.01$), EAT-26 ($r = -0.20$, $p = 0.005$) and Drive-for-Thinness score ($r = -0.23$, $p < 0.001$). Participants with an altered body image perception (*ie* difference between perceived and desired body size) had a significantly higher mean BSQ16 score than those with a non-altered body image perception (36.1 ± 12.0 vs. 29.4 ± 17.0; $p < 0.001$). In addition, they were significantly more likely to report being diagnosed with an eating disorder (odds ratio (OR) 2.03: 95% confidence intervals (CI); 1.78, 2.31, $p = 0.01$). Estimated body mass index was positively correlated with BSQ16 *(r* = 0.26, p < 0.001) and Drive-for-thinness ($r = 0.22$, $p = 0.0031$) scores. In partial correlation analyses controlling for estimated BMI and ethnicity, EAT-26 score was positively correlated with Drive-for-Thinness ($r = 0.67$, $p < 0.001$) and BSQ16 (r = 0.59, p < 0.001) scores and inversely correlated with the Rosenberg self-esteem score ($r = -0.20$, $p = 0.012$). In addition, BSQ16 was inversely correlated with the Rosenberg self-esteem score ($r = -0.26$, $p = 0.001$). Participants with EAT-26 scores $ 20 were significantly more likely to report binge eating (OR = 11.1, 95%CI: 2.9, 41.7; $p < 0.001$) and exercise as a means of losing weight (OR = 9.5, 95%CI: 1.2, 77.5; $p = 0.014$) than participants with scores < 20.

DISCUSSION

In this study, the correlates of body image perception and weight-related behaviour in a sample of adolescent schoolgirls was investigated. There was a medical diagnosis of an eating disorder in 2.4 per cent of participants. This suggests a relative low prevalence of eating disorders in this population and confirms the findings of other studies conducted on similar non-clinical populations (17, 29, 30). Not withstanding, eating disorders are on a continuum of disordered eating behaviours and many sub-clinical disordered states might go undiagnosed. Indeed, the results of the eating attitudes test as well as the participants' report of their binge eating, vomiting behaviours and use of laxatives to control weight suggest a spectrum of poor eating behaviour that are two to four times more prevalent than overt eating disorders (17, 29, 30).

In this study, Indo-Trinidadian adolescent females generally showed greater concern with body shape and had a greater desire to be thin than the other ethnic groups. The importance of ethnicity in body image perception and its sequelae are well known (16, 17, 30). This finding appears to support that of another published study showing satisfaction with thinness among Indo-Trinidadian females (16). There is an urgent need to investigate how cultural and socio-economic factors within ethnic groups contribute to negative body image perception and resulting weight-related behaviour as well as the role of media in influencing cultural norms associated with body image. This might be achieved by implementing well designed studies using standardized and valid tests to unearth the important issues involved. In this sample, the associations among body image perception, body dissatisfaction and weight-related behaviour have the potential for serious consequences. In addition, the established cut-off levels for these scores might be useful markers for unacceptable weight-related behaviour among members of this population. Furthermore, the fact that altered body image and body mass index were strongly associated with greater body dissatisfaction and weight-related behaviour suggests that the use of silhouettes as well as reported weight and heights might be useful instruments for rapid screening of poor eating and weight-related behaviour in this population.
The cross-sectional design used in this study cannot assess cause and effect relationships among variables of interest. Secondly, BMI was determined using self-report data which may have resulted in the underestimation of true BMI as well as a misclassification of weight categories. Despite this, several studies have suggest that perceived BMI is a stronger predictor of weight-related behaviour than actual BMI *per se* (31, 32). Thirdly, the small sample size might not yield an accurate estimation of prevalence of eating disorders.

Fourthly, the non-random sampling of participants in the study might have introduced bias in the estimation of prevalence. Finally, the reliability and validity of these instruments need to be assessed in a much larger study if their estimates are to be believed. A major strength of this study is the use of a battery of standardized psychometric tests to investigate issues related to body image perception in this population.

To summarize, in this group of adolescents, there were ethnic differences in the level of concern over body image and associated eating, and weight-related behaviour.

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