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A Quantitative Analysis Explaining the Aetiology of Body Weight Concerns and Physical Appearance Dissatisfaction among Undergraduates at The University of Mauritius

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Abstract

The idea of thinness in today's society is omnipresent and is leading to body dissatisfaction thereby encouraging unhealthy eating and exercise practices in not only women, but also in men who are increasingly focusing on their appearance. This study aimed at identifying the risk factors for weight concerns and physical appearance displeasure among 300 students, aged 18 to 25 years, at the University of Mauritius. Factor analysis was used to identify the following common weight loss behaviors which the participants adopt: "Concern about dieting and weight", "Physical Activities" and "Controlling the amount of food intake". Binary logistic regression analyses revealed that age, gender and region had an impact on one's willingness to maintain the ideal body weight and shape. There was also an interaction between age and region on body dissatisfaction.

Keywords: Depression; Prevalence; Anorexia nervosa; Dieting; Fitness

Introduction

In today's world, our society and media defines our physical appearance and determines what constitutes 'beauty', although these 'perfect' images to which we aspire are more often than not digitally enhanced (airbrushed) and manipulated before final production. Thus, it is not surprising that, instead of accepting and embracing our unique physique and morphology, we tend to focus on an illusory and unattainable perfection which can only be detrimental to us [1,2]. Various factors such as poor body image, negative body weight perception, media influence, and health problems have been linked to our obsession with thinness [3-6]. In particular, body image, defined as the way people see or think about their bodies and how they are viewed by others [7], has attracted lots of attention recently as people are very determined to improve their appearance when they perceive a gap between their own body and their "ideal" body. This gap results in body dissatisfaction, defined as a person's negative thoughts about his or her own body [8], low self-esteem [3,9,10] and also results in a significant increase in state depression [11,12]. Furthermore, distortions in body image and the resulting body dissatisfaction can be used to explain the prevalence of eating disorders such as Anorexia Nervosa and Bulimia Nervosa [13].

Individuals' weight management practices such as diet or exercise control is determined by one's body weight perception [14], which is one's self-evaluation of one's weight as underweight or normal weight or overweight irrespective of actual weight [15]. This perception of one's own body [8] is influenced by factors such as age, gender, family, peers, media, and ethnicity [16]. Indeed, children as young as 8 year olds reported body image concerns [17], with the notion of an ideal body becoming more salient in adolescence [18].

Additionally, body weight perception varies across different ethnicities [19] with white Americans and Japanese idealizing the ultra-thin body while African-Americans preferring larger bodies [20,21]. Past research on body weight perception was focused mainly on females because of the sociocultural accentuation given to skinny appearance for females [22]. However, recently body dissatisfaction has affected adolescent boys as well [23]. Yet, negative body image is expressed differently between the sexes-with women displaying an obsession with thinness [24,25], and men displaying an aspiration to lower body fat [26] or gain weight to look muscular [2]. Despite the contradictions, research suggests that the average weight boy is satisfied with his body mass and has a positive body weight perception [27]. Dieting has always been considered as the perfect strategy towards weight loss [28] among not only people who are normal and over-weight, but also those who are underweight. Yet, research demonstrates that, in the long run, restricting caloric intake will anticipate weight gain, instead of weight loss [25,29]. Whilst it is commonly known that females, as young as 13 years, consistently diet, males also diet to decrease body fat and gain lean muscles [30]. The quest for the ideal body has not left Mauritians unaffected. Fitness facilities are mushrooming around Mauritius, highlighting a drastic increase in the practice of physical activities in adults aged 35 to 54 years [31].

Additionally, weight loss programs, such as "Weigh-Less", proposing specific diet and/or exercise plans catered to individuals' needs have experienced sustained success in the country. Weight loss supplements such as 'Slim & Trim', 'Dr. Ernst' and 'BioSlim' have also proved to be quite popular among the population since they are perceived to provide quick results. Since individuals worldwide experience societal pressure to be thin and consequently experience body dissatisfaction, this study aimed at investigating the perception of body image, strategies of weight reduction and management, and the social factors influencing body dissatisfaction among male and female students at the University of Mauritius.

Data was collected using standardized questionnaires. Factor analysis technique was used to obtain the set of factors that influence perception of body image, strategies for weight control and social pressure to be thin. Stepwise logistic regression analysis was done to assess whether the factors Gender, Age, Region, Ethnicity, Faculty, Waist Circumference, and Body Mass Index predict body dissatisfaction amongst the youth of University of Mauritius. The organization of the paper is as follows: in the next section, the methodology part is described in detail consisting of the sampling strategy, the factor analyses and the step-wise regression analysis. The conclusion is presented in the following section.

Methodology

In this section, three important components are discussed. Firstly, the data collection and sampling layout are presented followed by the results of the factor analysis and lastly, the Generalized Linear Regression Model (GLM) is established to measure the contributory effects of the different factors influencing whether an undergraduate student is satisfied with his/her body image.

Data collection and sampling strategy

The target population was the undergraduate students who were enrolled at the University of Mauritius (UOM) for the academic year 2015/2016. Using the sampling strategy, an unbiased sample of students aged 18 and above was selected from the sampling frame that comprises of students from the different cohorts via a list submitted to us by the UOM registrar.

The table below provides the details on the sampling selection exercise from the different faculties at the University of Mauritius with FOA: Faculty of Agriculture; FOE: Faculty of Engineering; FOS: Faculty of Science; FLM: Faculty of Law and Management; FSSH: Faculty of Social Studies and Humanities (Table 1).

FOA	318	318/8013 × 300 ≈ 12
FOE	2265	2265/8013 × 300 ≈ 85
FOS	868	868/8013 × 300 ≈ 33
FLM	2867	2867/8013 × 300 ≈ 107
FSSH	1695	1695/8013 × 300 ≈ 63
Total	8013	300

Table 1: Sample determination.

Factor analyses for the different likert scales questions

The results from the factor analysis yield the followings (Table 2-4):

Strategies of weight control	
Factor 1: Physical Activities is Important	**Factor 5:** Not wasting Food
V8 Physical Activity	V28 Do not read calorie content
V12 Weight Control	V29 Eat due to frustration
V11 Duration Of Physical Activity	**Factor 6:** Emotional Eating
V13 Feeling Refreshed	V15 Eat less
V9 Exercise is Important	V17 Leave food on plate
Factor 2: Control the amount of food you consume	**Factor 7:** Controlling your food consumption
V20 Feeling Hungry	V22 Avoid fried foods
V21 Tasty Food	V30 Eat less
V19 Large Portion	V31 Eat due to depression
V18 Love for Food	**Factor 8:** We can eat dessert and still look healthy
V16 Overeat	V33 Eat more due to relationship problems
Factor 3 : Concern about weight control and Dieting	V32 Eat more when depressed
V2 Eating less when breaking diet	**Factor 9:** We consume more junk foods when we are anxious

V3 Preoccupied with Weight and Shape	V24 Eat dessert
V1 Rewarding oneself when losing weight	V35 Stress Eating
V4 Not worrying about weight gain	**Factor 10:** We eat more sweets when we are frustrated
Factor 4: Pastries	V27 No junk foods
V7 Not worried about gaining weight	V34 Anxiousness
V23 Avoid butter	**Factor 11:** How emotions affect your eating
V25 Eat sweets	V14 Avoid sporting activities
V10 Healthy without exercise	V26 Avoid ready -made foods

Table 2: Strategies of weight control.

Factor 1: How you feel about your body
V1 Should diet
V5 Feel fat due to pastries
V8 Worrying about body shape
V6 Feel large
V4 Feel fat
V14 Need for exercise
V9 Lack of self-conscious
V10 Seeing rolls of flesh
Factor 2: How you see your body
V7 Ashamed
V12 Reflection
V13 Among friends
V3 Bad shape
V11 Unfair
V2 Self-conscious about your shape

Table 3: Perception of the body image.

Factor 1: Pressure from family and friends
V11 Look thinner
V12 Improve appearance
V16 Develop appearance
V15 Get thinner
V13 Decrease body fat level
V17 Look in better shape
V14 Get in better shape
V18 Decrease level of body fat
Factor 2: Athletic Profile
V7 Look athletic
V6 Look More athletic
V2 Looking muscular
V1 Important to look athletic
V10 Look more muscular
Factor 3: Media pressure
V21 Good appearance
V19 To be in better shape
V22 Less body fat
V20 be thinner
Factor 4 : Thinness
V3 Look thin
V5 Thinking to look thin
V4 Little fat
V9 Little body fat
V8 Look very lean

Table 4: The Social factors.

Binary logistic regression analysis

In this subsection, the outcome variable (binary) which is "satisfied' or 'not satisfied" is regressed on a set of predictor variables. The explanatory variables that may influence the response variable are as follows: Gender, Age, Region, Ethnicity, Faculty, Waist Circumference, and Body Mass Index.

The below table illustrates the variables with their p-value and their reduction in deviance represented by the G-statistics (Table 5).

Explanatory	G-statistics	P-value	Significance
Gender	8.913	0.003	Significant
Age	35.586	0	Significant
Region	28.261	0	Significant
Ethnicity	3.015	0.083	Insignificant
Faculty	0.675	0.411	Insignificant
Waist circumference	3.789	0.052	Insignificant
Body Mass Index	3.558	0.059	Insignificant

Table 5: Reduction in deviance.

The first three variables listed were significant, namely: Gender, Age and Region with their p-value<0.005 and higher decrease in deviance (Table 6). The best model is defined as follows:

Satisfaction with body image=Constant+Gender+Age+Region +Age*Region

$\log it\pi_{ijk} = \eta + \alpha_i + \beta_j + \gamma_k + (\beta\gamma)_{jk}$ where 1=Male, 2= Female

j: 1=18-21, 2= 22-25

k: 1= Rural, 2= Urban

Variable and Category	Symbol	Estimate	Odds Ratio
Constant	η	1.8685	e1.8685=6.4786
Gender: Male	α_1	-0.4364	e−0.4364=0.6464
Age: 22-25	β_2	-2.2172	e−2.2172=0.1089
Region: Urban	γ_2	-1.8436	e−1.8436=0.1583
Age-Region: 22 to 25-Urban	$\beta\gamma_{22}$	1.1826	e1.1826=3.263

Table 6: Best model estimates.

The odds ratio and the probability that a student is in the age group of 22-25, male and living in an urban region and including an interaction effect between age and region is shown below:

Odds Ratio, $1.8685(1)-0.4364(1)-2.2172(1)-1.8436(1)+1.1826 = 0.236$

Probability:

$$\pi i = \frac{e1.8685(1) - 0.4364(1) - 2.2172(1) - 1.8436(1) + 1.1826}{1 - e1.8685(1) - 0.4364(1) - 2.2172(1) - 1.8436(1) + 1.1826} = 0.308$$

About 30.80% of the student is satisfied with their body image if they fit in the age category 22-25, being a male and living in an Urban region and with an interaction effect of age and region.

Conclusion

This study was designed to explore the reasons for weight concerns and physical appearance dissatisfaction among undergraduate students at the University of Mauritius. 300 questionnaires were distributed to the students through PPS sampling technique where 183 of the respondents were female and 117 were male. In this study, we observed that both males and females are preoccupied with thoughts of their weight and shape. The response rate was 6% for "Strongly Disagree", 13% "Disagree", 10% were "Neutral" and the highest rate was 46% for "Agree" and 25% for "Strongly Agree". It is noteworthy that 40% of the respondents who agreed being worried about their weight and shape also agree that they engage in physical activities for their health. This is consistent with the reasonable BMI of 62.3% of the students falling in the normal weight range which is between 18.5 and 24.9.

The effect of gender on body shape concerns was justified with female respondents being more dissatisfied with their body shape with a response rate of 67% "Usually True" for "Have you been so worried about your shape that you have been feeling that you ought to diet". As expected though, male respondents rated this question equally with 20% "Almost Never True" and 20% "Usually True". Next, the body image perception, when asked to compare their profile with the body image contouring drawing, 26% opted for profile 4 and 24% profile 5 which represent the average body profile. Hence we conclude that most students perceived themselves as having an average profile. Only 1% of the sample perceived themselves as having the extreme body type that is profile 1 and profile 9 representing extremely underweight and extremely obese.

Results from the sociocultural attitude test revealed that male counterparts favour a muscular body with 51 out of the 117 respond "Mostly Agree". Whereas for majority of females which was 61 out of 187 responded "Neutral". However, the response rate for a thin body was highest as expected with 75 "Mostly Agree" among females and

only 41 from males. The power of the media was justified with the highest records for "I feel pressure from the media to improve my appearance" being 54 "Mostly Agree" for female and 35 "Mostly Agree" for male. The results of the first factor analysis performed showed that "Physical Activities", Control of amount of food consumed" and "concern about weight and shape" are the 3 most popular weight loss behaviors to maintain the ideal weight. The second factor confirmed the fact that the way we feel and see our body influences our willingness to lose weight.

The Last factor analysis was about sociocultural attitude which demonstrate that the "Pressure from family and friends", "Athletic Profile", "Thinness" and "Media Pressure" have a direct impact on body dissatisfaction. Binary Logistic regression was performed to assess whether University of Mauritius students experience body satisfaction or not. The variables Age, Gender and Region were found to be significant and were the risk factors for body image.

It is also worth noting that as age increases body dissatisfaction decreases. The best model consists of Gender, Age, Region with an interaction between Age and Region. The data collected and the findings only show the causes of body image dissatisfaction in the sample and their willingness to maintain an ideal profile in society. Further research should aim at clarifying body image disturbance in early stages of childhood and more efforts could be made to sensitize individuals against these false ideologies about beauty.

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