ajfand
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Afr. J. Food Agric. Nutr. Dev. 2024; 24(2): 25426-25449 https://doi.org/10.18697/ajfand.127.23625

Date	Submitted	Accepted	Published
	19th July 2023	27th September 2023	29th February 2024

BODY IMAGE DISSATISFACTION, DISORDERED EATING ATTITUDES AND NUTRITIONAL STATUS AMONG FEMALE UNDERGRADUATE STUDENTS IN LAGOS, NIGERIA

Olatona FA[1]*, Kolanisi U[2] and A van Onselen[3]

Folu Olatona

*Corresponding author email: folaton@gmail.com

[1]Department of Dietetics and Nutrition, University of Kwazulu-Natal, Pietermaritzburg, South Africa

[2]Department of Consumer Science, University of Zululand. Richards Bay, South Africa

[3]Department of Life and Consumer Science, College of Agriculture and Environmental Sciences, Florida Campus, University of South Africa

ajfand
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY
AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

ABSTRACT

Body image dissatisfaction (BID) is associated with the development of disordered eating attitudes, which can eventually lead to eating disorders. This study was conducted to assess body image dissatisfaction, disordered eating attitudes and nutritional status of female undergraduate students in Lagos as a baseline for an online intervention study. It was a descriptive cross-sectional study. Multistage sampling technique was employed to select 1009 from the intervention group (University of Lagos) and 1005 students from the control group (Lagos State University). Data were collected using semi-structured self-administered questionnaire. Anthropometric measurements were taken following standard procedures. Perceived body size was determined by using the Pulver's Figure Rating Scale Silhouette. Disordered eating was assessed using the Eating Attitudes Test (EAT-26). Data were analysed using a statistical program IBM SPSS (version 25) with a significant level set at $p \leq 0.05$. Chi-squared tests were used to detect differences in proportions for categorical variables. Fisher's exact test was used where cell sizes were less than five, independent-samples t-tests were used to test for differences in the means of continuous variables. The mean age of the students was 20.7±2.0 years for intervention and 20.9±2.2 years control groups. The prevalence of body image dissatisfaction was 57.0% and 60.6% among intervention and control groups, respectively. The prevalence of underweight, overweight and obesity were 13.5%, 18.3% and 7.2%, respectively for the intervention group and 13.3%, 19.5% and 8.0% respectively for the control group. The prevalence of disordered eating attitudes was 5.2% and 4.7% for intervention and control groups, respectively. Only the control group demonstrated a significant positive association between nutritional status and body image dissatisfaction as well as body image dissatisfaction and disordered eating. There was no statistically significant difference in nutritional status, body image dissatisfaction and disordered eating attitudes among the students in the intervention and control groups. Although the prevalence of BID and overweight/obesity was high, the rate of disordered eating was low. The study showed a significant positive association between BMI and body image dissatisfaction as well as body image dissatisfaction and disordered eating among undergraduates in Lagos. Body Image dissatisfaction, overweight/obesity are higher than reported in the past although the prevalence of disordered eating was low among university undergraduates in Lagos. Interventions that address these three parameters are needed among university undergraduates to prevent increase in disordered eating, eating disorders and other related health consequences.

Key words: Nutritional Status, Underweight, Overweight, Obesity, Body Image Dissatisfaction, Disordered Eating

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

INTRODUCTION

Body image dissatisfaction has been on the rise over decades especially among adolescents and young adults which comprise the age groups of the majority of university undergraduate students [1]. Nutritional status has been shown to affect body image dissatisfaction. Individuals who perceive themselves to be either underweight or overweight have higher probability of body image dissatisfaction and engage in weight control behaviours. Many women who perceive themselves to be overweight or obese are more likely to attempt weight loss compared to others [2–5].

The global prevalence rate of body dissatisfaction varies among young adults, ranging from 48.5% in India to 64.9% in Nigeria and as high as 90% United States of America [6–8].

Body image dissatisfaction is associated with preoccupation with and a false perception of one's weight status, which can result in the development of low self-esteem, attempts to lose weight, engagement in unhealthy weight control practices and unhealthy eating patterns [9].

Dietary measures are the most preferred method for weight control among females and body image dissatisfaction is positively associated with dieting and disordered eating. The prevalence of disordered eating behaviours ranges from 4% in China, 28.6% in Saudi-Arabia to 46.4% in Kuwait [10–13].

Body image has been shown to be predictive of eating disorders with a significant positive correlation, especially among younger age groups [14]. Disordered eating behaviours (milder form of eating disorders) can be precursors to ED, leading to significant impairment of physical and psychosocial wellbeing. People with eating disorders have lower qualities of life, cardiovascular problems, digestive disorders, malnutrition, reproductive health problems, insomnia, anxiety, depression, suicide, fatigue, limitations in activities resulting from poor musculoskeletal health, other psychiatric disorders and highest mortality rate of any psychiatric disorder [5, 14–17].

Studies have reported higher levels of body image dissatisfaction and disordered eating among females compared to males. Women are more likely to be dissatisfied with their body appearance, therefore they are more likely to attempt to fit the social ideal of a slim body usually promoted in the media and develop disordered eating [18, 19].

Despite the increasing prevalence of BID and disordered eating as well as eextensivee research conducted in Western countries, little is known about them among female undergraduates in Lagos, Nigeria. Previous study in Lagos reported

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

a disordered eating prevalence of 21.9% among undergraduate females, while another one focused only on the social problems associated with the development of disordered eating behaviours [19, 20]

This study was, therefore, conducted to assess body image dissatisfaction, disordered eating behaviour and nutritional status, as well as examine the relationship between these parameters among female undergraduate students in Lagos, Nigeria. The results will serve as a baseline and basis for a tailored health education intervention for female undergraduate students to address the above parameters. Moreover, it would be useful in forming policies that can improve body image satisfaction and prevent disordered eating among female undergraduate students.

METHODS

Study design: A descriptive cross-sectional study

Setting: The study was conducted among female university undergraduates attending universities in Lagos, Nigeria. Data was collected from students in their various classes.

Study population: All female full-time undergraduate students in the universities who were apparently healthy and owned a smartphone or laptop and were eligible to participate in the study. Sample size determination: The minimum sample size calculated using the formula for the comparison of proportions of two independent groups ($n = \underline{(u + v)^2 (P_1(100-P_1) + P_2 (100 – P_2)}\ /(P_1 – P_2)^2$) was 556 for each group (after compensating for non-responses and attrition) but a higher sample of 1009 and 1005 students were recruited into the study based on the peculiarity of higher attrition rates in online intervention[21]. This current study was conducted as a baseline for an intended online intervention research that would address the parameters studied.

Sampling strategy: multi-stage sampling technique was employed to select the participants. Two out of three campuses were selected for the study. University of Lagos was selected (using balloting method) as the intervention group while Lagos State University was regarded as the control group. Simple random sampling (balloting) was used to select four faculties from each University as the first stage, two departments were selected from each faculty to give a total of eight departments from each university as the second stage. Stratified random sampling was used to select two levels from each of the eight departments to give sixteen levels from each university as the third stage. Balloting was used to select one class to give sixteen classes from each university, hence a total of thirty-two classes from both universities as stage four. Systematic random sampling was used to select the respondents from each class using the class list as the sampling

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

frame. Two thousand and fourteen students were selected from both universities at stage five.

Data collection: Data was collected using pretested semi-structured self-administered questionnaire. Questionnaire on socio-demographic and economic status were adapted from past literature. Anthropometric measurements were taken following standard procedures of measuring weight and height [22–24]. Current perceived body image (Feel) and ideal image were determined by Pulver's Figure Rating Scale Silhouette. Disordered eating was assessed using The Eating Attitudes Test (EAT-26) [25, 26].

The questionnaire was pretested in a public university close to Lagos (Federal University of Abeokuta) prior to the commencement of the main study. Some adjustments were made in the socio-demographic status (for example, private accommodation off campus was added to the options of residence) and smoking was added to the options of weight control strategies to improve the questionnaire after the pre-test.

Ten field assistants (nutritionists and medical students) were trained (by the researcher) to conduct anthropometric measurements and data entry. Completed questionnaires were entered into google form and most of the questions except section D were made mandatory for the students and research assistants to complete before they could submit to avoid improperly completed questionnaires. Capturing the data electronically eliminated errors and inconsistencies that could have occurred during manual data capture and entry.

Data analysis: The IBM Statistical Package for Social Scientists (SPSS version 25) was used to analyse quantitative variables. Socio-demographic data were analysed using descriptive statistics. Appropriate statistical tests of significance between the two groups were used for comparison. Chi-square and Fisher exact tests were used to compare proportions of many variables between the two groups. Independent-samples t-tests were used to test for differences in the means of continuous variables such as mean age and BMI, Mann Whitney U Test was used to compare medians scores of continuous variables such as median BMI in situations where the mean was not relevant. A p-value ≤0.05 was considered statistically significant.

Body image dissatisfaction was analysed using the Feel-Ideal difference index score based on the Pulvers' figure rating scale [25]. The ideal body image score was deducted from the perceived image figure to find the feel-ideal difference which is the body dissatisfaction. Values other than zero represent body image dissatisfaction. A positive value is indicative of the participant's wish to be thinner

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

than the perceived current size, while a negative value reflects the participant's wish to be heavier than the current perceived size.

The scores of EAT 26 was analysed to determine disordered eating attitude. Scores greater than 20 indicate disordered eating attitude and a need for further investigation by a qualified professional although scores below 20 can still be consistent with serious eating problems [26].

Ethical considerations: Ethical approval was sought and obtained from the Health Research and Ethics Committees of the relevant institutions (Lagos State Health Research and Ethics Committee; Approval No: LREC 06/10/1324 and Biomedical Ethics Research Committee of University of Kwazulu-Natal; Approval No: BREC/00000949/2020) before the commencement of the study. Permission was obtained from the deans of student affairs of the two universities. Informed written consent to participate in the research was obtained from the students. Confidentiality and anonymity were assured and maintained throughout the period of the study

RESULTS AND DISCUSSION

Sociodemographic Characteristics of Respondents

There was no significant difference between the ages and marital status of the students from the two universities (UNILAG: 20.7±2.0; LASU: 20.9±2.2 years; p=0.962 & 0.371). Only religion, ethnicity and income were significantly different (p=0.001) among the two populations. Although UNILAG students had parents who had more education, LASU students had higher income than them (p=0.015). The age distribution of students from both universities were similar with the largest population of students being less than 25 years old. (Table 1).

The age distribution is in consonant with findings from other studies worldwide as most people seek tertiary education immediately and not long after completion of secondary education. The mean age of the students from the two universities were similar (20.7±2.0 and 20.9±2.2). This is in consonance with the mean age of 21.65±2.60 years obtained from a study done among undergraduates in Anambra State. This similarity points to the average age group of university undergraduate students in Nigeria [27].

Body Image Dissatisfaction among Respondents

Both groups believe a smaller body size is the ideal, signifying that most students considered a thin body as the ideal and desired to be thinner (p=0.728) (Table 3). There was no significant difference between the mean feel-ideal difference score among students from the two universities. This supports the findings of previous studies done in other parts of the world indicating that thinness is perceived as ideal body size. This could be attributed to the large media and social

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

representation of thinness as the ideal body, as well as family and peer encouragement of the adoption of a slim figure [28, 29].

The adolescence and young adulthood periods of life are characterized by concerns of body image than any other period; hence findings of this study are in keeping with this belief and points to the need for the conscious promotion of body image health [30]. Although most of the students in the two universities had body image dissatisfaction (57% in UNILAG and 60.6% in LASU), BID is much lower than obtained in other parts of the world. A few other studies have reported lower rates of body image satisfaction of 10% in Chinese women and 20.5% in Croatian women indicating higher dissatisfaction [7].

Few students from both universities desired to be heavier (28.7% in UNILAG and 28.8% in LASU), which is similar to the findings in Saudi Arabia [29] which reported 19.7% desire to be heavier. A previous study conducted among female students in Ibadan showed a greater desire to be heavier (38%). This could mean that there is still some level of African cultural influence on preferred body size of female university undergraduates in Lagos though it seems to be decreasing. Majority of African cultures preferred and promoted plumper bodies [7, 8, 29, 31].

Most of UNILAG (57%) and LASU students (60%) were dissatisfied with their body image. More than one third of them (33.5% from UNILAG and 38.0% from LASU) had attempted weight loss. The most common reason for attempting weight loss or avoiding weight gain was appearance/cosmetic reasons (52.7% from UNILAG and 53.1% from LASU). A larger proportion of those who attempted weight loss were from LASU (38.0%) in keeping with a higher percentage of LASU students wishing to be thinner (31.8%) (Table 4).

Appearance/cosmetic reasons was the most common reason for weight control (52.7% in UNILAG and 53.1% in LASU) proving that perceived body image and the desire to achieve a certain ideal body image play a very significant contributory role in the adoption of weight control practices. Appearance has been shown to be a main motivator in weight control and is able to produce good short-term results. However, in a similar study in Malaysia, only 17.3% reported appearance as the main reason, while 64.6% of the female students reported being healthy as the major reason. Moreover, a systematic review reported improving wellbeing (95%) and fitness condition (85%) as the major reasons indicating the variations in motivations for weight control practices globally. The difference in motivations for weight control could be attributed to the varying levels of knowledge and exposure of students in a developing country compared to the developed countries [32, 33]. This suggests a need for awareness programs to address the motivation for weight management [32, 33].

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Nutritional Status of Respondents

Most students from both universities (60%) were within the normal weight category, while about 13% were underweight. More than a quarter of the students were either overweight or obese. There was no statistically significant difference between the nutritional status of students at the University of Lagos (UNILAG) and Lagos State University (LASU) (Table 2). This is similar to the findings of a study done in Osun State in Nigeria which reported that over 60% of the students were within the normal BMI range, 15% were underweight and about 20% were overweight or obese [34]. Other foreign studies also showed a similar pattern of nutritional status; in Bangladesh, 65% of the students were within the normal BMI range while 17% were underweight. In Malaysia, 60% of the female students were within the normal BMI range while 20% were underweight. In South Africa 67% were within the normal BMI range while 10% were underweight[35, 36].

Majority of female undergraduates have healthy weights; however, many of them are overweight/obese and underweight, which could be as a result of poor nutrition knowledge and practices such as the consumption of fast foods [37].

Disordered Eating Attitude

The prevalence of disordered eating attitude was low among both groups of students (5.2% in UNILAG and 4.7% in LASU). The observed difference between the two groups was not statistically significant (p=0.621), indicating a similarity in prevalence rates. The finding is similar to reports from Mongolia where the prevalence of disordered eating was 5.4%. However, the present findings are contrary to those of studies done in Bangladesh (20.4%) and Saudi-Arabia (36.6%) where higher prevalence of disordered eating was reported [38]. The difference could be attributed to higher influence of body image dissatisfaction and negative weight control practices among students in other countries compared to Nigeria and Mongolia [11, 39].

Nutritional status was not associated with BID among UNILAG students (p =0.672). This might suggest that other factors could be influencing BID in UNILAG. However, there was a statistically significant association between the nutritional status and attempt to lose weight (p=<0.001), avoidance of weight gain (p=<0.001) as well as body image dissatisfaction (p=<0.001) among LASU students. The majority of the students who were overweight (69.5%) and obese (81.3%) had attempted to lose weight indicating body weight concern among the groups. Further research would be beneficial in examining the weight management strategies (Table 5).

There was a statistically significant association between overweight/obesity and attempt to lose weight or avoid weight gain (p<0.001) among LASU female

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

students. The finding at LASU is in line with findings from other studies which state that females who are overweight and obese are more likely to express dissatisfaction with their bodies and engage in weight control strategies. This difference in nutritional status and weight control strategies between UNILAG and LASU could be attributed to the different levels of exposure to environmental factors influencing body image and weight satisfaction. The possible reasons could be living arrangements in UNILAG and LASU. Majority of the students at the intervention group lived on-campus, were probably more occupied with the academic rigors and had less exposure to family concern and societal pressure about body weight, while most students at the Lagos State University lived off-campus or at home and more exposed to media and other influences [40].

This study found a significant association between disordered eating and BID among the students at Lagos State University ($p=0.022$). The correlation between the two variables ($r= 0.598$) was statistically significant. ($p < 0.001$) indicating that as BID increases, prevalence of disordered eating increases (Table 6). The findings are in line with previous studies [3, 15] and contributes to the body of knowledge that body image dissatisfaction is usually associated with disordered eating attitudes.

Strengths and limitations of the study: The study demonstrated a high prevalence of body image dissatisfaction and its relationship with disordered eating, but it cannot be used to establish cause and effect relationships between body image dissatisfaction and disordered eating. Moreover, most of the weight loss strategies were self-reported.

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

The prevalence of body image dissatisfaction (57.0%) and (60.6%), overweight (18.3% and 19.5%) and obesity (7.2% and 8.0%) among female university undergraduates in Lagos were found to be higher than reported in the past though the prevalence of disordered eating attitude was relatively low (5.2%) and (4.7%). Body image dissatisfaction is positively associated with nutritional status and disordered eating attitude. Interventions that address these three parameters are needed among university undergraduates to avoid increase in disordered eating, eating disorders and other related health consequences.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the Deans of Students affairs of the two universities for granting permission to collect data.

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 1: Sociodemographic characteristics of respondents from Universities in Lagos, Nigeria

	Intervention Group	Control Group		
	N= 1009	(N=1005)		
	Freq (%)	Freq (%)		
Age (years)				
≤20	514 (50.9)	500 (49.8)	0.291	0.962
21-25	470 (46.6)	480 (47.8)		
26-30	21 (2.1)	21 (2.1)		
31-35	4 (0.4)	4 (0.4)		
Mean ± SD	20.7±2.0	20.9±2.2	t=-2.0	0.052
Academic level (year of study)				
100	213 (21.1)	233 (23.2)	1.497	0.827
200	270 (26.8)	254 (25.3)		
300	281 (27.8)	280 (27.9)		
400	165 (16.4)	159 (15.8)		
500	80 (7.9)	79 (7.9)		
Religion				
Christian	823 (81.6)	646 (64.3)	83.066	<0.001
Islam	170 (16.8)	346 (34.4)		
Other	16 (1.6)	10 (1.4)		
Ethnicity				
Yoruba	623 (61.7)	977 (97.2)	402.122	<0.001
Igbo	238 (23.6)	14 (1.4)		

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Hausa	9 (0.9)	9 (0.9)		
Others	139 (13.8)	5 (0.5)		
Marital status				
Single	991 (98.2)	992 (98.7)	0.799	0.371
Married	18 (1.8)	13 (1.3)		
Place of residence				
On-campus	782 (77.5)	255 (25.4)	555.734	<0.001
Private residence off-campus	158 (15.7)	601 (59.8)		
Home	69 (6.8)	149 (14.8)		
Average monthly pocket money (Naira)				
None	45 (4.5)	57 (5.7)	61.234	0.015
Not consistent	266 (26.4)	205 (20.4)		
1000-10,000	253 (25.1)	157 (15.6)		
10,001-20,000	232 (23.0)	260 (25.9)		
20,001-30,000	100 (9.9)	183 (18.2)		
>30,000	113 (11.2)	143 (14.2)		
Mother's level of education				
No formal education	10 (1.0)	26 (2.6)	14.054	0.015
Primary education	41 (4.1)	47 (4.7)		
Some Secondary Education	43 (4.3)	46 (4.6)		
Completed Secondary Education	176 (17.4)	212 (21.0)		
Some Tertiary Education	111 (11.0)	97 (9.7)		
Completed Tertiary Education	628 (62.2)	577 (57.4)		

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Father's level of education				
No formal education	7 (0.7)	23 (2.3)	11.301	0.046
Primary education	24 (2.4)	29 (2.9)		
Some Secondary Education	35 (3.5)	158 (15.7)		
Completed Secondary Education	132 (13.1)	92 (9.2)		
Some Tertiary Education	87 (8.6)	682 (67.9)		
Completed Tertiary Education	724 (71.8)			
Occupation of head of household				
Unemployed	17 (1.7)	13 (1.3)	15.82	0.015
Petty trading	18 (1.8)	34 (3.4)		
Farming	5 (0.5)	9 (0.9)		
Civil Servant	252 (25.0)	286 (28.5)		
Business	411 (40.7)	419 (41.7)		
Skilled Professional	261 (25.9)	209 (20.8)		
Retired	45 (4.5)	35 (3.5)		
Description of parental home				
Duplex/detached house	163 (16.2)	271 (27.0)	64.23	<0.001
Bungalow	363 (36.0)	287 (28.6)		
Flats	443 (43.9)	357 (35.5)		
Room apartment	40 (4.0)	90 (9.0)		

Footnote: all numbers in parenthesis are proportions

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 2: Nutritional status of the study participants in the two populations

Variable	Intervention Group	Control Group	X2	p-value
	N= 1009	(N=1005)		
	Freq (%)	Freq (%)		
Nutritional Status (kg/m2)				
Underweight (< 18.5)	135 (13.5)	133 (13.3)	1.525	0.91
Normal weight (18.5–24.9)	610 (61.0)	594 (59.3)		
Overweight/Pre-obesity (25.0–29.9)	183 (18.3)	195 (19.5)		
Obese Class I (30.0-34.9)	54 (5.4)	59 (5.9)		
Obese Class II (35.0-39.9)	16 (1.6)	17 (1.7)		
Obese Class III (Above 40.0)	2 (0.2)	4 (0.4)		
Mean BMI±SD	22.8±4.4	23.1±4.6	t=-1.362	0.173
Median BMI (IQR)	22.0 (19.5-25.1)	22.4(19.9-25.5)	Mann Whitney U =487704.000	0.139

Footnote: all numbers in parenthesis are proportions

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 3: The current perceived body size (feel) and the desired body size (ideal) among the study participants

Variable	Intervention Group	Control Group	X2	p-value
	N= 1009	(N=1005)		
Perceived current body size (feel)*				
A/1	36 (3.6)	33 (3.3)	5.379	0.716
B/2	210 (20.8)	179 (17.8)		
C/3	303 (30.0)	318 (31.6)		
D/4	204 (20.2)	222 (22.1)		
E/5	134 (13.3)	142(14.1)		
F/6	92 (9.1)	79 (7.9)		
G/7	17 (1.7)	20 (2.0)		
H/8	10 (0.3)	10 (1.0)		
I/9	3 (0.3)	2 (0.2)		
Mean score	3.60±1.47	3.64±1.42	t=-621	0.535
Desired body size (ideal)*				
A/1	10 (1.0)	7 (0.7)	6.387	0.604
B/2	102 (10.1)	88 (8.8)		
C/3	406 (40.2)	431 (42.9)		
D/4	347 (34.4)	323 (32.1)		
E/5	110 (10.9)	128 (12.7)		
F/6	30 (3.0)	24 (2.4)		
G/7	2 (0.2)	3 (0.3)		

https://doi.org/10.18697/ajfand.127.23625

ajfand
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY
AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

H/8	1 (0.1)	0 (0.0)		
I/9	1 (0.1)	1 (0.1)		
Mean score	3.55±0.99	3.56±0.96	t=-0.347	0.728
Feel-Ideal mean difference	0.048	0.073		
	t=1.245; P=0.214	t=1.894; P=0.058		

*Numbered as figures in the Pulver's Figure Rating Scale with the lowest number denoting the thinnest figure
Footnote: all numbers in parenthesis are proportions

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 4: Body image satisfaction, weight control attempts and reasons for weight control attempts among the study participants

Variable	Intervention Group	Control Group	X2	p-value
	N= 1009	(N=1005)		
	Freq (%)	Freq (%)		
Body image satisfaction				
Dissatisfaction	575 (57.0)	609 (60.6)	2.708	0.1
Satisfaction	434 (43.0)	396 (39.4)		
Body image desired				
Thinner	285 (28.2)	320 (31.8)	3.758	0.153
Heavier	290 (28.7)	289 (28.8)		
Satisfied	434 (43.0)	396 (39.4)		
Attempted weight loss				
Yes	338 (33.5)	382 (38.0)	4.461	0.035
No	671 (66.5)	623 (62.0)		
Attempted to avoid weight gain				
Yes	418 (41.4)	473 (47.1)	6.487	0.011
No	591 (58.6)	532 (52.9)		
Reasons for weight loss attempts	n=338	n=382		
Appearance/Cosmetic Reasons	178 (52.7)	203 (53.1)	0.017	0.898
Overweight/Fat	78 (23.1)	73 (19.1)	1.703	0.192
Like to be slimmer	60 (17.8)	97 (25.4)	6.141	0.013
Health reasons	12 (3.6)	8 (2.1)	1.408	0.235
Reasons for attempts to avoid weight gain	n=418	n=473	X2	p-value
Appearance/Cosmetics	180 (43.1)	194 (41.0)	0.382	0.537
Overweight/Fat	6 (1.4)	8 (1.7)	0.094	0.759
Health reasons	5 (1.2)	2 (0.4)		0.263***

***Fisher's exact p
Footnote: all numbers in parenthesis are proportions

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 5: Association between nutritional status and body image dissatisfaction, weight control attempts and disordered eating among the study population

Variable	Nutritional Status				X2	p-value
	Under-weight	Over-weight	Normal Weight	Obese		
	Intervention Group (n=1009)					
	n=141	n=185	n=611	n=72		
	Freq (%)	Freq (%)	Freq (%)	Freq (%)		
Body image dissatisfaction						
Dissatisfaction	77 (54.6)	108 (58.4)	353 (57.8)	37 (51.4)	1.546	0.672
Satisfaction	64 (45.4)	77(41.6)	258 (42.2)	35 (48.6)		
Attempted weight loss						
Yes	49 (34.8)	57 (30.8)	212 (34.7)	20 (27.8)	2.151	0.542
No	92 (65.2)	128 (69.2)	399 (65.3)	52 (72.2)		
Attempted not to gain weight						
Yes	61 (43.3)	79 (42.7)	256 (41.9)	22 (30.6)	3.883	0.274
No	80 (56.7)	106 (57.3)	355 (58.1)	50 (69.4)		
Disordered eating attitudes						
Yes	5 (3.5)	11 (5.9)	32 (5.2)	4 (5.6)	1.016	0.797
No	136 (96.5)	174 (94.1)	579 (94.8)	68 (94.4)		
	Control Group (n=1005)					
	n= 134	n= 197	n= 594	n=80		
	Freq (%)	Freq (%)	Freq (%)	Freq (%)		
Body image dissatisfaction						
Dissatisfaction	98 (73.7)	131 (66.5)	312 (52.5)	68 (85.0)	47.86	<0.001
Satisfaction	36 (26.9)	66 (33.5)	282 (47.5)	12 (15.0)		
Attempted weight loss						
Yes	10 (7.5)	137 (69.5)	170 (28.6)	65 (81.3)	221.9	<0.001
No	124 (92.5)	60 (30.5)	424 (71.4)	15 (18.8)		
Attempted not to gain weight						
Yes	36 (26.9)	133 (67.5)	237 (39.9)	67 (83.8)	110.5	<0.001

https://doi.org/10.18697/ajfand.127.23625

ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 24 No. 2
February 2024
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

No	98 (73.1)	64 (32.5)	357 (60.1)	13 (16.3)		
Disordered eating attitudes						
Yes	7 (5.2)	9 (4.6)	24 (4.0)	7 (8.8)	3.612	0.307
No	127 (94.8)	188 (95.4)	570 (96.0)	73 (91.3)		

Footnote: all numbers in parenthesis are proportions

Table 6: Association between body image satisfaction and disordered eating attitudes

	Body image satisfaction			
	Dissatisfied	**Satisfied**	**X2**	**p-value**
	Intervention Group			
Disordered eating attitudes	n=575	n=434		
Yes	29 (5.0)	23 (5.3)		
No	546 (95.0)	411 (94.7)	0.033	0.855
	Control Group			
Disordered eating attitudes	n=609	n=396		
Yes	36 (5.9)	11 (2.8)		
No	573 (94.1)	385 (97.2)	5.286	0.022

Footnote: all numbers in parenthesis are proportions

https://doi.org/10.18697/ajfand.127.23625

REFERENCES

1. **Izydorczyk B and K Sitnik-Warchulska** Sociocultural Appearance Standards and Risk Factors for Eating Disorders in Adolescents and Women of Various Ages. *Front Psychol.* 2018; **9:** 1–11.

2. **Mchiza ZJ, Parker WA, Makoae M, Sewpaul R, Kupamupindi T and D Labadarios** Body image and weight control in South Africans 15 years or older: SANHANES-1. *BMC Public Health*. 2015; **15:** 1–11. http://dx.doi.org/10.1186/s12889-015-2324-y

3. **Alkazemi D** Gender differences in weight status, dietary habits, and health attitudes among college students in Kuwait: A cross-sectional study. *Nutr Health.* 2019; **25(2):** 75-84. doi:10.1177/0260106018817410

4. **Haq I ul, Zahula M, Li M, Huang X, Jiang P, Zeb F, Wu X, Feng Q and M Zhou** A Comparative Study of Nutritional Status, Knowledge Attitude and Practices (KAP) and Dietary Intake between International and Chinese Students in Nanjing, China. *Int J Environ Res Public Health*. 2018; **15**. http://www.ncbi.nlm.nih.gov/pubmed/30177588 *Accessed 23 September 2019*.

5. **Galmiche M, Déchelotte P, Lambert G and MP Tavolacci** Prevalence of eating disorders over the 2000-2018 period: A systematic literature review. *Am J Clin Nutr.* Oxford University Press; 2019. bl 1402–13.

6. **Prabhu S and D D'Cunha** Comparison of body image perception and the actual BMI and correlation with self-esteem and mental health: A cross sectional study among adolescents. *International Journal of Health & Allied Sciences.* 2018; **7:** 145–9.

7. **Stojcic I, Dong X and X Ren** Body Image and Sociocultural Predictors of Body Image Dissatisfaction in Croatian and Chinese Women. *Front Psychol*. 2020; **11:** 1–18.

8. **Ayandele O and O Popoola** Perception of body image satisfaction among female students in Ibadan, Nigeria. *International Journal of Research in Arts and Social Sciences.* 2020; **13:** 139–49.

9. **Cruz-Saez S, Pascual A, Anna W and E Echeburua** The effect of body dissatisfaction on disordered eating: The mediating role of self-esteem and negative affect in male and female adolescents. *J Health Psychol*. 2020; **25:** 1098–108.

10. **Yu J, Lu M, Tian L, Lu W, Meng F, Chen C, Tang T, He L and Y Yao** Prevalence of disordered eating attitudes among university students in Wuhu, China. *Nutr Hosp*. 2015; **32:** 1752–7.

11. **Albrahim T, Alrubaish AA, Saleh Alfadhliah JT, Alaskar MK, Alatawi MA and SA Aldekhayyil** The spectrum of disordered eating attitudes among female university students: A cross-sectional study. *Current Research in Nutrition and Food Science.* 2019; **7:** 698–707.

12. **Hoteit M, Mohsen H, Bookari K, Moussa G, Jurdi N and N Yazbeck** Prevalence, correlates, and gender disparities related to eating disordered behaviors among health science students and healthcare practitioners in Lebanon: Findings of a national cross-sectional study. *Front Nutr.* 2022; **9:** 956310.

13. **Alkazemi D, Zafar TA, Ebrahim M and S Kubow** Distorted weight perception correlates with disordered eating attitudes in Kuwaiti college women. *Int J Eat Disord.* 2018; **51:** 449.

14. **Pirotta S, Barillaro M, Brennan L, Grassi A, Jeanes YM, Joham AE, Kulkarni J, Couch LM, Lim SS and LJ Moran** Disordered eating behaviours and eating disorders in women in Australia with and without polycystic ovary syndrome: A cross-sectional study. *J Clin Med.* 2019; **8:** 1–13.

15. **Aparicio-Martinez P, Perea-Moreno A-J, Pilar Martinez-Jimenez M, Dolores Redel-Macías M, Pagliari C and M Vaquero-Abellan** Social Media, Thin-Ideal, Body Dissatisfaction and Disordered Eating Attitudes: An Exploratory Analysis. *Int. J. Environ. Res. Public Health.* 2019; **16:** 4177. https://doi.org/10.3390/ijerph16214177

16. **Carey M and C Preston** Investigating the Components of Body Image Disturbance Within Eating Disorders. *Front Psychiatry*. 2019; **10:** 1–15.

17. **Falope V, Chapelle C, Grigioni S, Coeffier M and P Dechelotte** Impact of eating disorders and psychological distress on the quality of life of obese people. *Nutrition*. 2012; **28:** e7–13.

18. **Fayose TS, Adebara L and FA Bolarinwa** On the image promotion on social media by polytechnic students in Nigeria. *WJARAI* .2021; **09:** 188–97.

19. **Fadipe B, Oyelohunnu MA, Olagunju AT, Aina OF, Akinbode AA and TF Suleiman** Disordered eating attitudes: Demographic and clinico-anthropometric correlates among a sample of Nigerian students. *Afr Health Sci*. 2017; **17:** 513–23.

20. **Onyeke NG, Eze NM, Ugwu EI, Bamson M and A Bibian Ezeanwu** Cross-sectional Study on Eating Disorders among Female Undergraduates in a Nigerian University: Implications for Online Nutritional Interventions. *International Journal of Applied Engineering Research* 2018; **13:** 15130–5. http://ripublication.com/ijaer18/ijaerv13n21_43.pdf *Accessed 19 October 2022.*

21. **Semsarian CR, Rigney G, Cistulli PA and YS Bin** Impact of an online sleep and circadian education program on university students' sleep knowledge, attitudes, and behaviours. *Int J Environ Res Public Health* 2021; **18:** 10180.

22. **Alipour B, Abbasalizad FM, Dehghan P and M Alipour** Body image perception and its association with body mass index and nutrient intakes among female college students aged 18–35 years from Tabriz, Iran. Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity 2015; **20:** 465–471.

23. **Bede F, Cumber SN, Nkfusai CN, Venyuy MA, Ijang YP, Wepngong EN and AT Nguti Kien** Dietary habits and nutritional status of medical school students: The case of three state universities in Cameroon. *Pan African Medical Journal;* 35. Epub ahead of print 2020. https://doi.org/10.11604/pamj.2020.35.15.18818

24. **Belogianni K, Ooms A, Ahmed H, Nikoletou D, Grant R, Makris D and HJ Moir** Rationale and Design of an Online Educational Program Using Game-Based Learning to Improve Nutrition and Physical Activity Outcomes Among University Students in the United Kingdom. https://doi.org/101080/0731572420181476929 2018; **38:** 23–30.

25. **Johnson ER, Affuso O, Levitan EB, Carson TL and ML Baskin** Body image and dissatisfaction among rural Deep South African American women in a weight loss intervention. *J Health Psychol.* 2019; **24(9):** 1167-1177. Epub 2017 Feb 1. PMID: 28810419. https://doi.org/10.1177/1359105317694489

26. **Garner DM** The eating attitude test. 2017. Available at: http://www.eat-26.com/ *Accessed January 31, 2022.*

27. **Abamara NC, Oguegbe TM, Opiah CA and NI Nwangwu** Body image and self-esteem as predictors of binge eating disorders among female undergraduates. *UNIZIK Journal of Gender Research*. 2022; **1:** 69–91.

28. **Kabir Y, Zafar TA and C Waslien** Relationship between perceived body image and recorded body mass index among Kuwaiti female university students. Women Health. 2013; 53:693–705. http://www.ncbi.nlm.nih.gov/pubmed/24093450. *Accessed on 01 October 2019.*

29. **Khalaf A, Westergren A, Berggren V, Ekblom Ö and HM Al-Hazzaa** Perceived and Ideal Body Image in Young Women in South Western Saudi Arabia. J Obes. 2015; **2015:** 7.

30. **Justino MIC, Enes CC and LB Nucci** Self-perceived body image and body satisfaction of adolescents. *Rev. Bras. Saude Mater. Infant.*, 2020; **20:** 715–24.

31. **Michael Agwu E** Social Support, Body Image Perception and Depressive Symptoms, Among University Students in Nigeria, by Gender and Ethnicity. *Science Journal of Public Health.* 2017; **5:** 263.

32. **Khor GL, Zalilah MS, Phan YY, Ang M, Maznah B and AK Norimah** Perceptions of body image among Malaysian male and female adolescents. *Singapore Med J.* 2009; **50:** 303–11.

33. **Santos I, Sniehotta FF, Marques MM, Carraça E V and PJ Teixeira** Prevalence of personal weight control attempts in adults: a systematic review and meta-analysis. *Obes Rev.* Blackwell Publishing Ltd; 2017. bl 32–50.

34. **Ikujenlola AV and TS Adekoya** Nutritional status and feeding habits of females in public and private Universities in Osun state, Southwestern, Nigeria. *Heliyon*. 2020; **6:** e05023: https://doi.org/10.1016/j.heliyon.2020.e05023

35. **Rizwan AA, Huda MS, Azad AM and F Hasan** Effect of food habit on the nutritional status of the female university students Effect of food habit on the nutritional status of the female university students. *International Journal of Multidisciplinary Research and Growth Evaluation*. 2021; **2:** 82–4.

36. **Van den Berg VL, Abera BMM, Nel M and CM Walsh** Nutritional status of undergraduate healthcare students at the University of the Free State*. S Afr Fam Pract.* 2013; **55:** 445–52.

37. **Okafor AM, Nwazojie IZ and IC Afiaenyi** Nutrition knowledge and factors associated with anthropometric and haematological indices among female undergraduate students in University of Nigeria, Nsukka. *Agro-Science.* 2018; **17:** 58.

38. **Al Banna HM, Brazendale K, Khan SIM, Sayeed A, Hasan TM and S Kundu** Association of overweight and obesity with the risk of disordered eating attitudes and behaviors among Bangladeshi university students. *Eat Disord.* 2021; **40:** 101474.

39. **Choijiljav D, Nasanjargal T, Ogawa S, Oidov B, Yanjmaa E, Nyam N, Munkhbat L, Dash M, Hayashi K, Irie Y and H Shinozaki** Disordered Eating Attitude and Associated Factors among University Students in Ulaanbaatar, Mongolia. *The Kitakanto Medical Journal,* 2020; **70(3):** 223–8. https://www.jstage.jst.go.jp/article/kmj/70/3/70_223/_article/-char/ja/ *Accessed on 20 October 2022.*

40. **Ko N, Tam DM, Viet NK, Scheib P, Wirsching M and A Zeeck** Disordered eating behaviors in university students in Hanoi, Vietnam. *J Eat Disord*. 2015; **3**.