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Weighing the Mind: Body Image Satisfaction, Weight Perceptions and Weight Control in Young Female Adults

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Tables 1 to 6 are available in the Supplementary Files section.

WEIGHING THE MIND: BODY IMAGE SATISFACTION, WEIGHT PERCEPTIONS AND WEIGHT CONTROL IN YOUNG FEMALE ADULTS.

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Abstract

Background: Body image satisfaction, weight perception and weight control practices are interrelated dimensions of young women's physical and psychological health. University students are exposed to changing peer, academic, social media and lifestyle environments that may intensify body-related concerns, yet evidence from Rwanda remains limited. The study aimed to assess body image satisfaction, weight-related perceptions, and weight-control practices among female adults at the University of Rwanda, Remera Campus.

Methods: A descriptive cross-sectional study was conducted among 240 female undergraduate students. Participants were selected through proportionate stratified random sampling. Data were collected using a structured questionnaire, height and weight measurements, and the nine-figure Stunkard Figure Rating Scale. Body mass index (BMI) was calculated, and body weight satisfaction was derived from the difference between perceived current and ideal silhouettes. Data were analysed using IBM SPSS Statistics version 30. Descriptive statistics summarised participant characteristics, perceptions, and practices; Pearson $\chi 2$ tests assessed associations between categorical variables at the 5% significance level.

Results: The mean age was 22.85 years (SD: 1.56), and the mean BMI was 22.58 kg/m² (SD: 3.38). Most participants had a normal BMI (70.83%). Slightly more than half (51.67%) were satisfied with their body weight. Body weight satisfaction was significantly associated with actual BMI ($\chi 2=64.98$, df=6, $p<0.001$), self-perceived weight status ($\chi 2=95.09$, df=4, $p<0.001$), school ($\chi 2=27.52$, df=10, $p=0.002$) and year of study ($\chi 2=20.77$, df=8, $p=0.008$). Most students recognised healthy eating (97.1%) and exercise during weight loss (90.8%) as important, yet 61.3% reported difficulty maintaining their desired weight, and 50.5% reported difficulty maintaining a positive body attitude. Half had not attempted any weight modification in the preceding 60 days; among those who had, exercise (24.6%) and dieting (21.3%) were the most common weight-loss methods.

Conclusions: Body weight dissatisfaction was common and bidirectional among female undergraduate students. Although harmful weight-control practices were uncommon, gaps between weight-management knowledge, self-regulation, and actual physical activity indicate the need for culturally sensitive student wellness interventions that integrate body image literacy, media literacy, physical activity promotion, and psychosocial support.

Keywords: Body image; body weight satisfaction; weight perception; weight control practices; female university students; Rwanda; cross-sectional study; BMI

Background

Body image is a multidimensional construct that includes how individuals perceive, think about, feel about and behave toward their own bodies (1). It is not limited to appearance evaluation, but also reflects embodiment, self-compassion, cultural norms and the social meanings attached to

body size and shape (1). Within this broader construct, body weight perception refers to how individuals classify their own weight status (2,3). Whereas body weight satisfaction reflects the degree of congruence between perceived current weight or body size and the body size considered desirable (4). Dissatisfaction occurs when this perceived current body differs from the desired body, creating a drive either to reduce or increase weight (5).

The public health importance of body weight satisfaction lies in its close connection with mental health, physical health, nutritional behaviour, and health-related quality of life (6,7). Negative body image has been linked with low self-esteem, depressive symptoms, anxiety, disordered eating, excessive or avoidant exercise and unhealthy weight control practices (8,9). A systematic review of adolescent girls across diverse countries, including Brazil, the United States, South Korea, Australia, and several European countries, reported weight dissatisfaction ranging from 19.2% to 83.8%, highlighting the substantial burden of weight dissatisfaction and the influence of sociocultural context; however, differences in age, cultural norms, socioeconomic conditions, and study settings limit direct comparability with female university students in Rwanda (10). These concerns are especially important because body image develops during adolescence and young adulthood, when health behaviours related to diet, activity and self-care are being consolidated (8).

Body weight satisfaction is shaped by interacting biological, psychological, social, cultural and environmental determinants (11). Measured weight status, particularly body mass index (BMI) outside the normal range, often contributes to dissatisfaction, but objective weight alone does not explain body image outcomes. Social comparison, exposure to appearance-focused media, peer and family commentary, internalisation of beauty ideals, weight stigma, self-esteem, stress and emotional eating all contribute to how young women interpret their bodies (12–14). Cultural expectations also influence whether thinness, normal weight, curviness or larger body size is valued.

Westernised thin ideals coexist with locally valued body-size norms in many non-Western settings, producing complex and sometimes conflicting weight preferences among young women (14).

International and regional evidence confirms that body dissatisfaction and weight control behaviours are widespread among female students, but the direction and expression of dissatisfaction vary across regions (5,6). Studies from China and Palestine have shown that many female students with normal BMI desire weight loss, suggesting that perceived weight and body

ideals may be stronger behavioural drivers than clinical weight status (15,16). Conversely, African evidence indicates that dissatisfaction may also involve a desire to be larger or thinner because larger body size can symbolise attractiveness, maturity, health, fertility, prosperity or social acceptance in some communities (5,14,17). In Uganda, body image dissatisfaction was observed among female university students despite a predominance of normal weight, reinforcing the need to assess both actual and perceived weight status (18). Research among South African female students reported frequent use of weight-loss strategies, mainly exercise and dietary modification, but also some unhealthy practices, including meal skipping, fasting, laxatives and self-induced vomiting (19).

Female university students represent a particularly important population for this research. The transition to university often involves greater autonomy over food choices, changes in physical activity patterns, academic pressure, peer comparison, residence away from family and increased exposure to digital media (20). These conditions may intensify appearance concerns while also creating opportunities for health promotion. The focus on females is justified by consistent evidence that girls and young women experience greater sociocultural pressure around body appearance, report higher levels of body dissatisfaction and are more likely than boys and young men to engage in weight-control behaviours motivated by appearance rather than health alone (10,21).

In Rwanda, empirical evidence on body image satisfaction, weight perception, and weight-control practices among female university students remains scarce, despite the growing relevance of body-related concerns in young adulthood. This gap is important because body image satisfaction is not determined by BMI alone; it is also shaped by how young women perceive their own body size, compare themselves with peers and media images, interpret sociocultural expectations, and respond with weight-control behaviours. Therefore, this study aimed to determine the level of body image satisfaction and its associations with actual BMI, perceived weight status, school, year of study, age, and residence, assess perceptions of body weight, and examine weight-control practices among young female adults at the University of Rwanda.

Methods

Study design

This study employed a quantitative descriptive cross-sectional study design and was conducted between February 2026 and April 2026.

Study setting

The study was conducted at the University of Rwanda (UR), College of Medicine and Health Sciences (CMHS), Remera Campus, located in Gasabo District, Kigali, Rwanda. CMHS was selected because the study focused on female undergraduate students within a university health-sciences setting. Remera Campus was selected because it brings together several CMHS schools and had an identifiable population of female undergraduate students across different academic disciplines, providing an appropriate sampling frame for the study. The campus comprises the Schools of Dentistry, Health Sciences, Medicine and Pharmacy, Nursing and Midwifery, Public Health, and Mathematics and Science Education. The diversity of these schools also enabled proportionate stratified sampling to ensure representation across academic disciplines.

Study population

The source population comprised 602 female undergraduate students enrolled at the University of Rwanda, Remera Campus during the 2025-2026 academic year. I think it's also important to include the years of study

Eligibility criteria

Eligible participants were female undergraduate students enrolled at the UR, Remera Campus, during the 2025-2026 academic year and included in the official school-based sampling frame. Students were eligible regardless of marital or parental status Students were excluded if they were pregnant or had physical or cognitive conditions that could interfere with reliable anthropometric measurement or questionnaire completion.

Sample size and sampling

The sample size was calculated using Yamane's formula for finite populations: n=N/[1+N(e)^2] (where **N** was the total female undergraduate population at Remera Campus, **e** was the 5% margin

of error). The calculation yielded a minimum sample of approximately 240 participants, which was used as the final sample size.

Sampling procedure

A proportionate stratified random sampling approach was used. First, the total female undergraduate population was stratified by school. Second, the number of participants required from each school was calculated proportionally, with $nh = (Nh/N) \times n$.

where (**nh** was the required sample from a given school, **Nh** was the female population in that school, **N** was the total female population across schools, and **n** was the overall sample size).

The resulting allocation was Dentistry, 28 participants; Health Sciences, 76; Medicine and Pharmacy, 39; Nursing and Midwifery, 41; Public Health, 32; and Mathematics and Science Education, 24.

After proportional allocation, a sampling frame was prepared for each school using the list of eligible female undergraduate students. Each eligible student within a stratum was assigned a unique identification code. The required number of participants from each school was then selected using a computer-generated random selection procedure based on the assigned identification codes. This ensured that every eligible female student within each school had an equal chance of being selected.

The selected students were contacted through their respective departments with the assistance of class representatives Students who agreed to participate were informed of the study objectives, procedures, confidentiality measures, and voluntary participation. Students who met the eligibility criteria and provided a written electronic informed consent were enrolled in the study. Students who declined participation, and/or could not be reached despite repeated attempts, or were no longer eligible were treated as non-respondents and replaced with another randomly selected student from the same stratum, using the same identification-code procedure. This was done to maintain the required proportional sample size for each school while preserving random selection within strata.

Data collection tools and measurements

Data were collected using a structured Kobo toolbox questionnaire with five sections. Section A captured sociodemographic characteristics, including age, school, year of study and residence.

Section B assessed weight perception and body image using the nine-figure Stunkard Figure Rating Scale and measured height and weight. Section C assessed perceived effects of gaining or losing weight on confidence, social relationships, health, femininity, attractiveness and opposite-sex attraction. Section D assessed body weight perceptions and self-regulation using Likert-type items. Section E assessed current weight goals including whether participants wanted to lose weight, maintain their current weight, or gain weight, perceived sedentary status, weight control practices within the previous 60 days and selected physical activity and rest behaviours within the previous seven days. (Appendix 1)

Anthropometric measurements and BMI classification

Weight and height were measured using standard anthropometric procedures. Participants removed shoes, heavy clothing and pocket items before measurement. Weight was measured in kilograms to the nearest 0.1 kg using a calibrated scale. Height was measured using a stadiometer, with participants standing upright, heels together, feet flat, and head positioned in the Frankfurt plane. Height was recorded to the nearest 0.1 cm and converted to meters for BMI calculation. Privacy was maintained during all anthropometric measurements. BMI was categorised using standard adult categories: underweight (<18.5 kg/m^2), normal weight (18.5-24.9 kg/m^2), overweight (25.0-29.9 kg/m^2) and obesity (≥30.0 kg/m^2) (22).

Figure Rating Scale measurement

Body weight satisfaction was assessed using the nine-figure Stunkard Figure Rating Scale, which presents ordered silhouettes ranging from the thinnest silhouette, numbered 1, to the largest silhouette, numbered 9 (23,24). Participants first selected the figure that best represented their perceived current body size, and then selected the figure that best represented their ideal body size (23,24). The feel-ideal difference (FID) score was calculated as:

FID = current silhouette score - ideal silhouette score

FID = 0 indicated body weight satisfaction, FID > 0 indicated a desire to lose weight, and FID < 0 indicated a desire to gain weight (24).

Pilot study and data quality assurance

Before the main data collection, the questionnaire was piloted among approximately 10% of the intended sample (n=24) among students who were not included in the final analysis. The pilot

assessed clarity of wording, logical flow, completion time, feasibility of anthropometric measurement and acceptability of body image questions. Feedback from the pilot was used to refine ambiguous wording and improve questionnaire structure before full deployment.

Data collection procedure

The selected students were contacted through their respective departments with the assistance of class representatives. Students who agreed to participate were informed about the study objectives, procedures, confidentiality measures, and voluntary nature of participation and were sent an electronic informed consent form. After providing written electronic informed consent, participants completed and submitted the electronic questionnaire. After questionnaire submission, the researcher conducted anthropometric measurements, including weight and height, which were used to calculate BMI. Privacy was maintained during questionnaire completion and anthropometric measurements. Completed questionnaires were checked for completeness and consistency before data entry. Electronic data were stored on a password-protected computer accessible only to the researcher and supervisor. Personal identifiers were not included in the analysis dataset.

Statistical analysis

Data were exported from KoboToolbox to Microsoft Excel for cleaning, then analysed using IBM SPSS Statistics version 30. Continuous variables were summarised using means, standard deviations and ranges. Categorical variables were summarised using frequencies and percentages. Pearson $\chi 2$ tests were used to assess associations between body weight satisfaction and categorical predictors, including BMI category, perceived weight status, age group, school, year of study and residence. Statistical significance was set at $p<0.05$. Because the study was cross-sectional, associations were interpreted without inferring causality.

Ethics approval

Ethical approval was obtained from the Institutional Review Board of the University of Rwanda, College of Medicine and Health Sciences (reference: CMHS/IRB/811/2025). The study was conducted in accordance with the Declaration of Helsinki. Administrative permission was obtained from the College administration through the principal before data collection.

Consent to participate

Written informed consent was obtained electronically from all participants before enrolment in the study. Participation was voluntary. Participants were informed about the study purpose, procedures, confidentiality protections, and their right to withdraw at any time without penalty. No personal identifiers were included in the final dataset or manuscript.

Results

Participant characteristics

A total of 240 female undergraduate students participated in the study. The mean age was 22.85 years (SD 1.56), with ages ranging from 19 to 27 years. Most participants were aged 22-24 years (64.6%), and the largest school group was Health Sciences (31.7%). More than two-thirds (68.8%) lived in university dormitories. The sociodemographic characteristics of participants are presented in Table 1.

Table 1. Socio-demographic characteristics of participants (N = 240)

Body composition and perceived weight status

The mean BMI was 22.58 kg/m² (SD 3.38), ranging from 17.06 to 37.88 kg/m². Most participants had a normal BMI (70.83%), while obesity was the least common category (3.75%). Similarly, most participants perceived themselves as being about the right weight (79.58%), whereas underweight was the least common perception (4.17%). Actual BMI category was significantly associated with perceived weight status ($\chi 2 = 122.61$, $p < 0.001$). However, Misclassification between measured BMI and perceived weight status was evident. Correct perception was highest among participants with overweight, with 50.0% correctly perceiving themselves as overweight, whereas it was lowest among participants with obesity, with only 11.1% correctly perceiving themselves as obese.

Body weight satisfaction

Body weight satisfaction was assessed using the difference between perceived current and ideal silhouettes. The mean discrepancy score was 0.16 (SD 1.11), indicating a slight overall tendency

toward desire for a smaller body, but with substantial variation. Slightly more than half of the participants (51.67%) were satisfied with their body weight. Among those dissatisfied, 27.92% desired to lose weight and 20.42% desired to gain weight. The distribution of BMI categories, perceived weight status and body weight satisfaction is summarised in Table 2.

Table 2: Body mass index, perceived weight status and body weight satisfaction (N=240)

Body weight satisfaction was significantly associated with actual BMI category ($\chi2=64.98$, df=6, $p<0.001$). Satisfaction was highest among students with normal BMI (60.6%). Most overweight students (70.0%) and obese students (66.7%) desired to be thinner, whereas more than half of underweight students (52.4%) desired to be bigger. Body weight satisfaction was also significantly associated with self-perceived weight status ($\chi2 = 95.09$, df = 4, $p < 0.001$). Among students who perceived themselves as overweight, 87.2% desired weight loss while among those who perceived themselves as underweight, 70.0% desired weight gain.

Age was not significantly associated with body weight satisfaction ($\chi2=8.85$, df=16, p=0.919), and neither was place of residence ($\chi2=2.68$, df=4, p=0.613). However, school was significantly associated with body weight satisfaction ($\chi2 = 27.52$, df = 10, p = 0.002), with students from the School of Dentistry reporting the highest satisfaction. Year of study was also significantly associated with satisfaction ($\chi2 = 20.77$, df = 8, p = 0.008), with greater dissatisfaction among first-year students and generally higher satisfaction in later years. Table 3 presents the distribution of body weight satisfaction according to actual BMI category and perceived weight status.

Table 3: Body weight satisfaction by actual BMI and perceived weight status

Perceptions toward body weight

Participants identified health and psychological well-being as the most important perceived consequences of weight change. Most students reported that gaining or losing weight could affect being healthier (86.2%), feeling more confident (67.9%) and being prettier (65.8%). Perceived social consequences were less strongly endorsed: 55.0% believed weight change could affect attractiveness to the opposite sex, 54.2% believed it could affect femininity, and 35.8% believed it could affect having more friends.

Perceptions related to healthy weight management showed high awareness but also challenges in self-regulation (Table 4). Nearly all participants agreed or strongly agreed that healthy eating is

important for weight control (97.1%) and that they could develop a healthy body weight (96.3%). However, 61.3% agreed that it was often difficult to maintain their weight at the desired level, 40.8% reported difficulty resisting foods that could cause weight gain, and 50.5% reported difficulty maintaining a positive body attitude when exposed to unrealistic media images.

Table 4: Perceptions toward body weight and weight control behaviours

Weight control practices and weekly health behaviors

More than half of the participants (51.67%) reported that they were not currently trying to do anything about their weight. Among those with active weight goals, 27.92% were trying to lose weight, and 20.42% were trying to gain weight. Most participants (76.7%) did not consider themselves as sedentary. Weight management goals were not significantly associated with self-perceived sedentary status ($\chi 2 = 3.291$, df = 2, p = 0.193).

In the preceding 60 days, 50.0% of participants reported not taking any action to change their weight. The most common practices were exercise for weight loss (24.6%) and dieting for weight loss (21.3%). Practices aimed at weight gain included binge eating (12.1%) and stopping exercise (9.6%). Potentially harmful weight-control practices were rarely reported: 0.4% reported using diet pills and 0.8% reported using laxatives (Table 5).

Table 5. Weight control practices reported in the previous 60 days

Perceived peer weight control practices

Participants were also asked how often they thought a typical female undergraduate student at the University of Rwanda, Remera Campus, engaged in selected weight-control practices. Exercise to maintain weight had the highest mean score (2.22), indicating moderate perceived use. Binge eating to gain weight had a mean score of 1.80; dieting to lose weight, 1.78; and fasting to lose weight, 1.71, all indicating moderate perceived use. Taking diet pills had the lowest mean score (1.20), indicating low perceived use among peers.

Weekly physical activity and rest behaviour

Participation in structured physical activity was generally low. During the previous seven days, 40.4% of participants reported no vigorous exercise lasting at least 20 minutes or no moderate exercise lasting at least 30 minutes. Only 5.4% reported engaging in such exercise on all seven days. Similarly, 43.3% reported no muscle-strengthening or toning exercise during the previous week, and only 3.8% reported doing such exercises on all seven days. More than half of participants (51.2%) reported no exercise aimed at toning a specific body part to improve appearance.

Sleep patterns were more favourable than exercise patterns. Overall, 27.1% of participants reported getting enough sleep to feel rested on all seven days, while 11.7% reported not getting enough sleep on any day during the previous week (Table 6).

Table 6: Weekly physical activity and rest behaviour in the preceding seven days

Discussion

The prevalence of body image dissatisfaction in this study (48.33%) is consistent with the broad global range reported among girls and young women, and closely resembles findings from some African university settings (10). These findings are similar to those from Sudan and Uganda (18,25). It can be stated that the body weight image dissatisfaction among Rwandan female students is neither negligible nor exceptional; rather, it reflects a pattern observed across university populations in which objective weight, perceived weight, and sociocultural ideals interact.

A notable contribution of this study is its demonstration of the bidirectional nature of dissatisfaction. While 27.92% desired to lose weight, 20.42% desired to gain weight. This differs from many Western and Asian settings, where dissatisfaction among female students is often dominated by the desire for thinness (15). The finding aligns more closely with African evidence showing that larger or curvier body sizes may be valued in some contexts because they can symbolise health, maturity, fertility, prosperity or social desirability (17). At the same time, the presence of a substantial group desiring thinness suggests that Rwandan female students may be negotiating both traditional body-size values and globalised thin or fit body ideals transmitted through the media, peer networks, and urban lifestyles.

The strong association between actual BMI and satisfaction was expected and agrees with previous studies showing lower satisfaction among individuals whose BMI falls outside the normal range

(26,27). However, the association between perceived weight and satisfaction was even more conceptually important. Students who perceived themselves as overweight overwhelmingly desired weight loss, while those who perceived themselves as underweight mostly desired weight gain. This provides evidence that subjective body weight perception may be a more immediate driver of dissatisfaction and weight-control behaviour than measured BMI alone. For campus health interventions, this means BMI screening without discussion of self-perception may miss students with normal weight who remain dissatisfied or students who are underweight who desire weight gain through unsafe approaches.

The findings on perceptions on body weight show that students were generally well informed about healthy eating and exercise. However, the gap between knowledge and self-regulation was substantial: many students reported difficulty maintaining desired weight, resisting foods associated with weight gain, and maintaining a positive body attitude when exposed to unrealistic media imagery. This pattern is consistent with sociocultural models of body image, in which health knowledge alone may be insufficient when students are exposed to appearance comparison, peer expectations and emotionally driven eating cues (28,29). The reported difficulty with media images is particularly relevant in the digital era, as comparisons of appearance on social media have been associated with body dissatisfaction and a drive for thinness (29,30).

Weight control practices in this study were less harmful than those reported in several international and regional studies. The study findings contradict those from South Africa where it was established that female university students commonly used healthy methods but also reported unhealthy and extreme practices, including fasting, laxatives and self-induced vomiting (19). The use of dieting and other weight-related behaviours even among students with normal BMI have been reported elsewhere (31,32). The lower number of students who reported using unhealthy and extreme practices (which include fasting, laxatives and self-induced vomiting) could be due to genuine lower use of extreme methods. This could also be explained by reduced access to such products, lower social acceptability, socioeconomic reasons or underreporting due to social desirability bias (33). Therefore, the low prevalence of harmful practices should be interpreted cautiously but remains encouraging from a public health perspective.

The discrepancy between self-perceived activity status and reported weekly exercise deserves attention. Although three-quarters of participants did not consider themselves as sedentary, 40.4%

reported no vigorous or moderate exercise during the previous week, and 43.3% reported no muscle-strengthening activity. This may reflect optimism bias, misunderstanding of what constitutes sufficient physical activity, academic time pressure, limited access to recreational spaces or competing responsibilities (34,35). Similar patterns have been reported in student populations in which body image and lifestyle behaviours were found to be connected but not always aligned (36). Physical activity promotion should therefore move beyond general advice and include practical scheduling, peer-based activities, safe spaces for women, and non-stigmatising messaging that emphasises strength, health, and well-being rather than appearance alone (37).

Strengths and limitations

This study has several strengths. It used measured height and weight rather than relying only on self-reported anthropometry, reducing misclassification of BMI. It also assessed actual BMI, perceived weight status, silhouette-based satisfaction, weight-related perceptions and weight control practices in the same sample, allowing a more integrated understanding of body weight experiences among Rwandan female students. Proportionate stratified random sampling improved campus coverage across schools, and the focus on both desire to lose and desire to gain weight is important for African contexts where body ideals may not be limited to thinness.

Several limitations should be considered. The cross-sectional design prevents causal inference; therefore, observed associations cannot establish whether BMI or perceived weight caused dissatisfaction or whether dissatisfaction influenced weight control practices. Although participants were randomly selected within strata, non-response replacement may still have introduced some selection bias if replacement students differed systematically from initially selected students. The study was conducted on one campus and included only female students, limiting generalizability to male students, other University of Rwanda campuses and other universities. Self-reported perceptions and practices may be affected by recall bias and social desirability bias, especially for sensitive behaviors such as diet pills, laxatives, binge eating or sedentary behavior. The Stunkard Figure Rating Scale is practical and widely used, but its silhouettes were developed outside Rwanda and may not fully capture local body-shape preferences or body-part concerns. The study did not measure waist circumference, body composition, eating disorder symptoms, self-esteem, anxiety, depression, family history, genetic

predisposition, household background, food security or detailed social media exposure; residual confounding from these unmeasured factors is possible. These limitations should guide cautious interpretation and future research design.

Implications for practice, policy and research

The findings support the need for culturally sensitive student wellness programs at the University of Rwanda. Such programs should avoid weight stigma and recognise both types of dissatisfaction: the desire to be thinner and the desire to be larger. Interventions should integrate body image literacy, media literacy, practical nutrition education, physical activity promotion, emotional coping skills, and referral pathways for students experiencing severe distress or engaging in potentially harmful practices. University health services could use brief screening questions about body satisfaction and weight practices during wellness activities, especially for first-year students, who may be more vulnerable during the transition to campus life. Future studies should use longitudinal and mixed-methods designs, include male students and multiple universities, and incorporate validated measures of mental health, eating-disorder risk, social media exposure, food security, family influences, and objective physical activity.

Conclusions

Body weight dissatisfaction is an important concern among young women at the University of Rwanda, reflecting both a desire for thinness and a desire for a larger body size. The findings suggest that body image is shaped not only by measured and perceived weight status, but also by the wider academic and social environment. Although awareness of healthy eating and exercise was generally high, this knowledge did not consistently translate into sustained weight-management behaviours or regular physical activity. University-based responses should therefore move beyond information provision alone. Culturally appropriate interventions should integrate body image counselling, media literacy, behavioural self-regulation, and accessible opportunities for physical activity, while promoting healthy weight management without reinforcing unrealistic body ideals. Future research should examine the social, cultural, and psychological mechanisms underlying body dissatisfaction and evaluate the effectiveness of tailored campus-based interventions.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to the confidentiality and privacy requirements associated with the study participants but may be available from the corresponding author on reasonable request, subject to appropriate ethical and institutional requirements.

Competing interests

The authors declare no competing interests.

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Authors' contributions

Conceptualization- GM, FK, WM; Methodology- GM, FK, WM; Data collection- GM; Data analysis and interpretation of results- GM, FK, JG, EK. FK supervised the study; GM- Wrote the original manuscript. GM, AK, EK, WM, FK and JG were involved in reviewing and revising the manuscript and all authors read and approved the final manuscript.

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REFERENCES

1. Burychka D, Miragall M, Baños RM. Towards a Comprehensive Understanding of Body Image : Integrating Positive Body Image , Embodiment and Self-Compassion. 61(1):248–61.
2. Frank R, Claumann GS, Felden ÉPG, Silva DAS, Pelegrini A. Body weight perception and body weight control behaviors in adolescents. J Pediatr (Rio J) [Internet]. 2018;94(1):40–7. Available from: http://dx.doi.org/10.1016/j.jped.2017.03.008
3. Bhurtun DD, Jeewon R. Body Weight Perception and Weight Control Practices among Teenagers. ISRN Nutr. 2013;2013:1–6.
4. Xu F, Cohen SA, Greaney ML, Greene GW. The association between US adolescents' weight status, weight perception, weight satisfaction, and their physical activity and dietary behaviors. Int J Environ Res Public Health. 2018;15(9).
5. Mohamed BAA, Idrees MHD. Body image dissatisfaction and its relation to body mass index among female medical students in Sudan: across-sectional study 2020-2021. BMC Womens Health. 2023;23(1):4–11.
6. Gadaga AKR, Katuka R, Charehwa N, Sithole P V. Title : Body Image Satisfaction and Associated Factors Among Tertiary Students in Harare , Zimbabwe : A Cross-Sectional Study . Affiliations : Article Meta Data : 2025;1–19.
7. Sirang Z, Bashir HH, Jalil B, Khan SH, Hussain SA, Baig A, et al. Weight patterns and perceptions among female university students of Karachi: A cross sectional study. BMC Public Health. 2013;13(1).
8. Reel J, Voelker D, Greenleaf C. Weight status and body image perceptions in adolescents: current perspectives. Adolesc Health Med Ther [Internet]. 2015;149. Available from: https://doi.org/10.2147/AHMT.S68344
9. Goswami S, Sachdeva S, Sachdeva R. Body image satisfaction among female college students. Ind Psychiatry J. 2012;21(2):168.

10. Martini MCS, Assumpção D de, Barros MB de A, Mattei J, Barros Filho A de A. Prevalence of body weight dissatisfaction among adolescents: a systematic review. Rev Paul Pediatr. 2022;41:e2021204.

11. Pradeilles R, Holdsworth M, Olaitan O, Irache A, Osei-Kwasi HA, Ngandu CB, et al. Body size preferences for women and adolescent girls living in Africa: a mixed-methods systematic review. Public Health Nutr. 2022;25(3):738–59.

12. Rodgers RF, Paxton SJ. EMPIRICAL RESEARCH A Biopsychosocial Model of Body Image Concerns and Disordered Eating in Early Adolescent Girls. 2014;814–23.

13. Merino M, Tornero-Aguilera JF, Rubio-Zarapuz A, Villanueva-Tobaldo CV, Martín-Rodríguez A, Clemente-Suárez VJ. Body Perceptions and Psychological Well-Being. Healthcare [Internet]. 2024;1–44. Available from: https://pubmed.ncbi.nlm.nih.gov/39057539/

14. Abdoli M, Scotto Rosato M, Desousa A, Cotrufo P. Cultural Differences in Body Image: A Systematic Review. Soc Sci. 2024;13(6).

15. Zhang L, Qian H, Fu H. To be thin but not healthy - The body-image dilemma may affect health among female university students in China. PLoS One. 2018;13(10):1–14.

16. Nazzal Z, Nazzal W, Maraqa B. Body perceptions and weight control behaviors among Palestinian University female students: a cross-sectional study. J Public Heal. 2022;30(8):1915–21.

17. Hurston JS, Worthy CC, Huefner EA, Sayed MS, Dubose CW, Mabundo LS, et al. An Overview of Body Size Preference, Perception and Dissatisfaction in Sub-Saharan Africans Living in the United States. Diabetes, Metab Syndr Obes . 2024;17(September):3279–93.

18. Ainembabazi B, Nabubuya A, Mukisa IM. Body Image Perception, Eating Habits, and Nutritional Status of Female University Students: A Case of Makerere University, Uganda. J Nutr Metab. 2025;2025(1).

19. Senekal M, Lasker GL, Van Velden L, Laubscher R, Temple NJ. Weight-loss strategies of South African female university students and comparison of weight management-related characteristics between dieters and non-dieters. BMC Public Health [Internet].

2016;16(1):1–12. Available from: http://dx.doi.org/10.1186/s12889-016-3576-x

20. Cao J, Wang K, Shi Y, Pan Y, Lyu M, Id YJ, et al. Effects of personal and interpersonal factors on changes of food choices and physical activity among college students. 2023;1–16. Available from: http://dx.doi.org/10.1371/journal.pone.0288489

21. Issues M. Sociocultural pressure : a model of body dissatisfaction for young women Pressão sociocultural : um modelo de insatisfação corporal para mulheres jovens Presión sociocultural : un modelo de insatisfacción corporal para mujeres jóvenes. 2020;36(11).

22. Keys A, Taylor HL. INDICES OF RELATIVE WEIGHT AND OBESITY. 1972;25:329–43.

23. Hills AP, Hills AP, King NA. Methods to develop figure rating scales (FRS): A systematic review Diabetes & Metabolic Syndrome : Clinical Research & Reviews Methods to develop fi gure rating scales (FRS): A systematic review. 2021;(March).

24. Parzer V, Sjöholm K, Brix JM, Svensson PA, Ludvik B, Taube M. Development of a BMI-Assigned Stunkard Scale for the Evaluation of Body Image Perception Based on Data of the SOS Reference Study. Obes Facts. 2021;14(4):397–404.

25. Mohamed BAA, Idrees MHD. Body image dissatisfaction and its relation to body mass index among female medical students in Sudan: across-sectional study 2020-2021. BMC Womens Health. 2023;23(1):1–12.

26. Weinberger N alexandra, Kersting A, Riedel-heller SG, Luck-sikorski C. Body Dissatisfaction in Individuals with Obesity Compared to Normal-Weight Individuals : A Systematic Review and Meta-Analysis. 2016;424–41.

27. As-sa E, Sheerah S, Al-ayoubi R, Al-jehani A, Tajaddin W, Habeeb H. Body image dissatisfaction : Prevalence and relation to body mass index among female medical students in Taibah University , 2011. J Taibah Univ Med Sci [Internet]. 2013;8(2):126–33. Available from: http://dx.doi.org/10.1016/j.jtumed.2013.05.001

28. Apd KR. Social media , body image and food choices in healthy young adults : A mixed methods systematic review. 2020;(May 2019):19–40.

29. Bonfanti RC, Melchiori F, Teti A, Albano G, Rodgers R, Coco G Lo. The association

between social comparison in social media , body image concerns and eating disorder symptoms : A systematic review and St ′. 2025;52(May 2024).

30. Hendrickse J, A M, Arpan LM, Clayton RB, Ridgway JL. Computers in Human Behavior Instagram and college women ' s body image : Investigating the roles of appearance-related comparisons and intrasexual competition. Comput Human Behav [Internet]. 2017;74:92–100. Available from: http://dx.doi.org/10.1016/j.chb.2017.04.027

31. Malinauskas BM, Raedeke TD, Aeby VG, Smith JL, Dallas MB. Dieting practices , weight perceptions , and body composition : A comparison of normal weight , overweight , and obese college females. 2006;8:1–8.

32. Press D. Prevalence and correlates of dieting in college women : a cross sectional study. 2012;405–11.

33. Scd YK, Thomas JJ, Rodgers RF, Scd SBA, Subramanian S V, Eddy KT, et al. Risk factors for disordered weight control behaviors among Korean adolescents : Multilevel analysis of the Korea Youth Risk Behavior Survey. 2018;(December 2017).

34. Brown CEB, Richardson K, Pizzirani BH, Atkins L, Yücel M, Segrave RA. Key influences on university students ' physical activity : a systematic review using the Theoretical Domains Framework and the COM - B model of human behaviour. BMC Public Health [Internet]. 2024;1–23. Available from: https://doi.org/10.1186/s12889-023-17621-4

35. Pan M, Ying B, Lai Y, Kuan G. Status and Influencing Factors of Physical Exercise among College Students in China : A Systematic Review. 2022;

36. Goicochea EA, Coloma-naldos B, Moya-salazar J, Rojas-zumaran V. Physical Activity and Body Image Perceived by University Students during the COVID-19 Pandemic : A Systematic Review. 2022;

37. Panão I, Nutritionist A. Effects of exercise motivations on body image and eating habits / behaviours : A systematic review. 2019;(May):1–19.

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