

Article

Are Body Size Misperception or Body Image Dissatisfaction Potential Influences in Addressing Obesity? A Mediation Study in an Adult Mexican Population

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Abstract

Obesity is among the most prevalent health conditions worldwide. Incorporating variables beyond metabolic factors, such as body image (BI), may improve understanding of its underlying mechanisms. Body image dissatisfaction (BID) and body size misperception (BSM) have been associated with psychological outcomes; however, further research is needed. This study aimed to characterize BI in Mexican adults with obesity and examine its relationships with BSM and BID. A cross-sectional study was conducted at the Unidad de Investigación en Epidemiología Clínica in 2025. The Stunkard Figure Rating Scale, BSQ-34, BAS-2, and Rosenberg Self-Esteem Scale assessed BSM, body concern (BC), body appreciation (BA), and self-esteem (SE), respectively. Pearson correlations and two PROCESS serial mediation models (6) were applied, with BMI as the dependent variable and age and sex as covariates. Model 1 specified BSM as the independent variable and BC, BA, BID and SE as sequential mediators; Model 2 specified BID as the independent variable and included BSM as the final mediator. BSM and BID were associated with BMI ($B = 1.46$, $p < 0.01$ and $B = 1.43$, $p < 0.01$). No significant indirect effect was observed. These findings suggest distinct associations of psychological components of body image with obesity.

Keywords: obesity; dissatisfaction; misperception; appreciation; body image

1. Introduction

Obesity is one of the leading global public health challenges [1–4]. Its recognition as a complex chronic disease, driven by interacting biological [5–7], behavioral [8,9], environmental, and psychosocial factors [10], has prompted the development of more comprehensive management strategies that extend beyond metabolic determinants. Within this framework, psychological approaches regarding body image self-perception, such as body image misperception (BIM) and body image dissatisfaction (BID), have gained prominence over the last decade [11,12]. Body image self-perception refers to the subjective representation of one's own body, shaped by cognitive and emotional processes influenced by sociocultural norms and individual experiences [13]. In obesity, body image has been linked to treatment effectiveness, quality of life, self-esteem (particularly among young women) and an individual's ability to make decisions to improve their health [14–16].

Body image misperception refers to an inaccurate perception of one's own weight status; numerous studies have shown that a substantial proportion of individuals with obesity do not accurately perceive or identify their weight status [17–19]. This misperception may increase vulnerability to low self-esteem, psychological distress, body rejection



Academic Editors: Ritesh Chimoriya and Kritika Rana

Received: 12 August 2026

Revised: 5 September 2026

Accepted: 10 September 2026

Published: 14 September 2026

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and, in some cases, may contribute to more severe consequences including depression and disordered eating [20,21]. At the same time, body image dissatisfaction reflects a negative evaluation of one's own body, often arising from perceived discrepancies between one's own appearance and the ideal body figure influenced by prevailing sociocultural ideals; this process may promote the internalization of weight stigma and the development of negative weight-related stereotypes [22]. Previous studies have shown that BID is mediated by the relationship between higher weight, depression and low self-esteem [23]. In this way, BIM and BID have increasingly been recognized as relevant factors that may influence treatment adherence and clinical outcomes.

However, the characterization of populations with high obesity prevalence—such as that of Mexico—along with media influences promoting body self-acceptance movements and disparities in access to obesity treatments, can contribute to social shifts regarding body ideals in modern times [24,25]. Consequently, BIM and BID may still be insufficiently characterized regarding potential psychological mediators, as well as actual objective adiposity, beyond just BMI. In this context, the present study aimed to characterize body image perception in Mexican adults with obesity, examine its relationship with psychological variables such as self-esteem and self-appreciation, and explore its potential role in the disease.

2. Materials and Methods

2.1. Study Design

An analytical cross-sectional study was conducted at the Unidad de Investigación en Epidemiología Clínica (UIEC) of the Instituto Mexicano del Seguro Social (IMSS), Guadalupe, Mexico, between June and December 2025. Participants were recruited through random sampling among individuals attending the medical unit. Eligible participants were adults aged ≥ 18 years, able to complete written questionnaires, without physical limitations for anthropometric assessment, and without diagnosed psychiatric disorders, except for anxiety or depression under treatment. Pregnant women and healthcare personnel working at the institution were excluded. Participants with incomplete data were excluded from the final analysis to ensure data quality and consistency.

2.2. Clinical Data Collection

The initial assessment included the creation of a clinical record containing relevant sociodemographic characteristics and medical history. Participants then received standardized instructions on the psychometric instruments, which were administered in printed format in a quiet, controlled environment. To minimize potential emotional bias, anthropometric and clinical assessments were performed after completion of the questionnaires. Measurements included height (using a conventional stadiometer), waist and hip circumferences (using a non-elastic measuring tape), and body composition assessed by bioelectrical impedance InBody 120 analyzer (InBody Co., Ltd., Seoul, Republic of Korea). Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared (kg/m^2) and classified according to CDC criteria [20]: underweight (<18.5), normal weight ($18.5\text{--}24.9$), overweight ($25\text{--}29.9$), obesity class I ($30\text{--}34.9$), class II ($35\text{--}39.9$), and class III (≥ 40). Waist-to-hip ratio (WHR) was calculated as the ratio of waist to hip circumference, and body fat percentage (BFP) was obtained from the bioimpedance analysis.

2.3. Psychometric Assessments

2.3.1. Body Image Perception

Body image perception was assessed using the Stunkard Figure Rating Scale (FRS), which includes sex-specific silhouettes ranging from severe thinness (silhouette 1) to severe obesity (silhouette 9) [26]. This instrument has demonstrated adequate reliability and

internal consistency and has been validated in a Mexican population [27]. Participants were asked to select the silhouette that best represented their current perceived body size (FRS1) and the silhouette corresponding to their ideal body size (FRS2). In accordance with previous reports, silhouettes were reclassified to represent a BMI category as follows: silhouette 1 = underweight; silhouette 2–3 = normal weight; silhouette 4–7 = overweight; and silhouette 8–9 = obesity, with the aim of facilitating the association between the actual state and the patient's potential perception, as well as the statistical analysis [28]. The difference of ≥ 2 silhouettes between perceived and desired body size was considered to indicate the existence of body image dissatisfaction (BID) [27]. BID was further categorized as negative (desire for a smaller body size) or positive (desire for a larger body size), and this instrument did not assess the intensity of the dissatisfaction. Body size misperception (BSM) was defined as the discrepancy between the perceived silhouette (FRS1) and the BMI category derived from objective measurements, consistent with previous approaches [28].

2.3.2. Degree of Body Image Dissatisfaction

The degree of BID was further evaluated using the 34-item Body Shape Questionnaire (BSQ-34) [29], validated in the Mexican population. This instrument includes six response options and differentiates between normative and clinically significant dissatisfaction. It demonstrates high internal consistency ($\alpha = 0.93$ – 0.98) and reliability (0.90), with sensitivity of 84.3% and specificity of 84.4%. Total scores were classified according to the validation as follows [30]: <80 , absent or mild concern; 80–110, moderate concern; and >110 , severe concern.

2.3.3. Degree of Appreciation for Body Image

To assess positive concepts related to body image, such as the appreciation and acceptance of one's own body characteristics, the Body Appreciation Scale 2 (BAS-2) instrument was implemented. The scale shows high internal consistency ($\alpha = 0.86$ – 0.96) and reliability (0.90) and has been validated in Spanish-speaking populations. Scores were categorized as high (>4.0), moderate (3.0–3.9), and low (<3.0) body appreciation [31,32].

2.3.4. Self-Esteem

To assess the emotional impact of self-perception and body image, the Rosenberg Self-Esteem Scale was used; it is composed of 10 items evaluating global self-worth and self-acceptance. This scale has demonstrated good internal consistency in the Mexican population ($\alpha = 0.87$). Scores were categorized as follows: 36–40, high self-esteem; 27–35, moderate self-esteem; and <26 , low self-esteem [33].

2.4. Sample Size and Statistical Analysis

Sample size was estimated for a two-tailed test of bivariate correlation, assuming a statistical power of 80%, a significance level (α) of 0.05, and an expected correlation coefficient of $r = 0.21$, based on findings from previous studies conducted in populations with similar characteristics [34]. Data were analyzed using IBM SPSS Statistics version 23.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize sociodemographic and clinical variables. The distribution of continuous variables was assessed using the Kolmogorov–Smirnov test, and the associations between variables were examined using Pearson's correlation coefficient.

2.5. Mediation Model

To further examine the relationships among variables, a serial mediation model (Model 6) was conducted using the PROCESS macro for SPSS (version 4.1) developed by Hayes [35]. Bootstrapping with 10,000 resamples and 95% confidence intervals was applied to estimate indirect effects. Body mass index was specified as the independent variable, while body

size misperception and body image dissatisfaction were analyzed as dependent variables in separate models. The mediators included scores from the BSQ-34, BAS-2, and Rosenberg Self-Esteem Scale. Age and sex were included as covariates in all models.

3. Results

A total of 200 adults of both sexes who attended the UIEC during the study period were initially included. Of these, 32 participants had incomplete or inconsistent assessments and were excluded from the final analysis. The remaining sample comprised 168 participants, with a mean age of 44 ± 13.2 years, of whom 41.7% were male. Overall, 63.7% of participants reported a diagnosis of a chronic non-communicable disease, while 5% reported anxiety or depression under pharmacological treatment. Other demographic characteristics are shown in Table 1, as well as anthropometric characteristics and body fat percentage in Table 2. Most participants had a BMI within the overweight (36.9%) or obesity ranges (47.6%) regardless of sex. Notably, the sample reflected the current epidemiological profile of the Mexican population, as a considerable proportion of individuals with normal BMI exhibited elevated body fat percentages; this finding is particularly relevant given the random sampling design of the study.

Table 1. Demographic characteristics.

Variable	<i>n</i>	(%)
Sex		
Male	70	(41.7)
Age, mean $\pm$ SD	44	± 13.2
Education		
Doctorate	5	(3)
Master's	7	(4.2)
Bachelor's	45	(26.8)
High school	51	(30.4)
Middle school	51	(30.4)
Elementary school	8	(4.8)
Occupation		
Employee	99	(58.9)
Student	8	(4.8)
Homemaker	33	(19.6)
Retired	17	(10.1)
Diagnosis of chronic illness	107	(63.7)
Use of antidepressants	9	(5.4)

SD: Standard Deviation.

Table 2. Baseline anthropometric characteristics.

Variable	<i>n</i>	(%)
Weight (kg), mean $\pm$ SD	80.9	± 18.8
Height (cm), mean $\pm$ SD	164.6	± 9.4
BMI Category		
Underweight	1	(0.6)
Normal Weight	25	(14.9)
Overweight	62	(36.9)
Obesity	80	(47.6)
Waist-to-Hip Ratio	0.9	± 0.1
Body Fat Percentage	35.5	± 8.8

SD: standard deviation.

3.1. Baseline Status of Objective Adiposity and Self-Perception of Body Image

The distribution of FSR1 showed that most participants selected silhouettes corresponding to being overweight (67.3%) and normal weight (23.8%), whereas extreme categories (underweight and obesity) were infrequently chosen (0.6% and 4.8%, respectively). In contrast, based on objective BMI classification, most participants were categorized as overweight (36.9%) or obese (47.6%) (Table 3).

Table 3. Comparison of the selected Figure Rating Scale with real BMI and BFP.

	Current Perceived Body Size Figure (FSR1)							
	Silhouette 1		Silhouette 2–4		Silhouette 5–7		Silhouette 8–9	
BMI (kg/m ²), mean ± SD	24.75	±0.91	25.8	±2.9	30.9	±4.34	40.7	±9.3
BFP (%), mean ± SD	25.5	±7	30.8	±7.1	36.9	±8.4	44.5	±9.4
	Ideal body size figure (FSR2)							
	Silhouette1		Silhouette2–4		Silhouette5–7		Silhouette8–9	
BMI (kg/m ²), mean ± SD	32.9 *	-	28.8	±4.02	33.6	±7	-	-
BFP (%), mean ± SD	43 *	-	35.2	±8.2	37.3	±9.7	-	-

The Stunkard Figure Rating Scale (FSR) was used to assess participants' body image perceptions. Participants were asked to select the silhouette that best represented their current perceived body size (FSR1) and the silhouette corresponding to their ideal body size (FSR2). After administering this psychometric instrument, objective measurements of weight, height, and body fat percentage were taken. The BMI and BFP results were compared with the FSR1 and FSR2 figure selections. The means and standard deviations of the BMI and BFP of the patients in each selected figure range are shown. (*) The SD is omitted because only one individual selected the desired low-weight figure. (-) No patients selected the respective figures. BFP: Body fat percentage, BMI: Body Mass Index.

3.2. Presence and Degree of Body Image Dissatisfaction

FSR1 identified negative body image dissatisfaction in up to 80% of participants. BSM was more pronounced among individuals with body fat percentage >30% and BMI > 25 kg/m², who frequently selected silhouettes corresponding to normal weight (silhouettes 2–4), indicating underestimation of their actual adiposity. Notably, among participants with obesity, the FSR2 was more commonly represented by silhouettes corresponding to the overweight range (silhouettes 5–7), rather than normal weight (silhouettes 2–4) (Table 4). To further assess the degree of BID and related concern about body image, the BSQ-34 scale was administered. Overall, 19.6% of participants exhibited moderate (normative) BID, while 13.7% showed severe levels, indicative of clinically significant concern. Bivariate correlation analysis demonstrated that BSQ-34 scores were positively associated with BMI ($r = 0.27$, $p < 0.05$), body fat percentage ($r = 0.34$, $p < 0.05$), and FSR1 ($r = 0.412$, $p < 0.05$) (Table 5).

Table 4. Proportion of patients in BID categories and according to the magnitude of the discrepancy between FSR1 and FSR2.

BID Categories *					
Positive <i>n</i> (%)		Negative <i>n</i> (%)		Absent <i>n</i> (%)	
7 (4.2)		127 (75.6)		29 (17.3)	
Magnitude of the discrepancy in participants with negative dissatisfaction *					
1 **	2	3	4	5	6
38 (22.6%)	56 (33.3%)	24 (14.3%)	7 (4.2%)	1 (0.6%)	1 (0.6%)

(*) The difference of ≥ 2 silhouettes between perceived (FSR1) and desired body size (FSR2) was considered to indicate the existence of body image dissatisfaction (BID) [26]. BID was further categorized as negative (desire for a smaller body size) or positive (desire for a larger body size), (**) Without discrepancy between FSR1 and FSR2.

Table 5. Pearson correlation analysis.

	Rosenberg	FSR1	BFP	BMI	BAS-2
BSQ-34	−0.334	0.412	0.34	0.27	−0.551
BAS-2	0.422	−0.295	-	-	-
FSR1	-	-	0.678	-	-

All values shown correspond to statistical significance $p = <0.001$, (-) absence of correlation.

3.3. Body Image Appreciation and Self-Esteem

Body appreciation and acceptance of one's own characteristics were assessed using the BAS-2. The results showed that the largest proportion of participants had moderate levels of body appreciation (46.4%); regarding self-esteem, 17.9% of participants had low levels, 50% moderate, and 32.1% high self-esteem. Body appreciation and self-esteem were positively correlated ($r = 0.42$, $p < 0.05$) and did not appear to be significantly associated with BMI ($r = -0.13$, $p = 0.07$) or body fat percentage ($r = -0.137$, $p = 0.07$). In contrast, Rosenberg Self-Esteem Scale scores showed significant inverse correlations with FSR1 ($r = -0.29$, $p < 0.05$), BID ($r = -0.32$, $p < 0.05$), and BSQ-34 scores ($r = -0.55$, $p < 0.05$), indicating lower levels of body dissatisfaction among individuals with higher self-esteem (Table 5).

3.4. Influence of Body Image Dissatisfaction, Self-Esteem, Body Appreciation and Body Size Misperception on BMI

To further elucidate the relationships between BSM, psychological components of body image and BMI, two mediation models were tested. In Model 1, BSM was specified as the independent variable and BMI as the dependent variable, with body appreciation (BAS-2), body concern (BSQ-34), body dissatisfaction, and self-esteem (Rosenberg Scale) entered as sequential mediators. Model 2 specified BID as the independent variable and incorporated BSM as the final mediator. Age and sex were included as covariates in both models.

Model 1 was statistically significant ($F(6, 153) = 5.69$, $p = <0.001$), explaining 18.2% of the variance in BMI ($R^2 = 0.182$). BSM was a significant predictor of BMI ($B = 1.46$, $SE = 0.33$, $p = <0.01$), indicating that greater body size misperception was associated with higher BMI. BSM was associated with body concern ($B = 7.59$, $SE = 1.71$, $p = <0.01$), but not with body appreciation ($B = -0.09$, $SE = 0.05$, $p = 0.051$) or self-esteem ($B = 0.17$, $SE = 0.35$, $p = 0.62$). Among the mediators, only body concern was significantly associated with BMI ($B = 0.03$, $SE = 0.01$, $p = <0.05$), whereas body appreciation ($B = 0.61$, $SE = 0.61$, $p = 0.32$) and self-esteem ($B = -0.01$, $SE = 0.08$, $p = 0.87$) were not significantly associated with BMI. The total indirect effect of BSM on BMI was not statistically significant ($B = 0.01$, $BootSE = 0.17$, [95% CI: -0.168 – 0.51]), and none of the specific indirect effects reached statistical significance, indicating no evidence of mediation.

Model 2 was also statistically significant ($F(6, 153) = 11.3$, $p = <0.001$), accounting for 30.7% of the variance in BSM ($R^2 = 0.307$). Body dissatisfaction (BID) emerged as a strong predictor of BMI ($B = 1.43$, $p = <0.001$), indicating that greater discrepancy between perceived and desired body shape is associated with higher BMI. Body size misperception also remained a significant predictor within this model ($B = 1.70$, $SE = 0.72$, $p = 0.019$). BMI was positively associated with body concern (BSQ-34) ($B = 1.43$, $SE = 0.42$, $p = <0.01$) but was not significantly associated with body appreciation ($B = 0.003$, $SE = 0.011$, $p = 0.07$) or self-esteem ($B = 0.001$, $SE = 0.081$, $p = 0.988$).

In turn, body concern was negatively associated with body appreciation ($B = -0.015$, $SE = 0.002$, $p < 0.001$), while body appreciation was positively associated with self-esteem ($B = 2.39$, $SE = 0.61$, $p < 0.001$). In the final model, body appreciation was negatively associated with BSM ($B = -0.31$, $SE = 0.14$, $p = 0.027$), whereas body concern ($B = 0.007$,

$SE = 0.004$, $p = 0.075$) and self-esteem ($B = 0.009$, $SE = 0.018$, $p = 0.605$) were not significantly associated with BSM. However, neither body appreciation nor body concern was significantly associated with BMI ($B = 0.0068$, $BootSE = 0.0040$, 95% CI [0.0004, 0.0157] whereas none of the remaining specific indirect effects reached statistical significance (Figure 1 and Supplementary Materials S1).

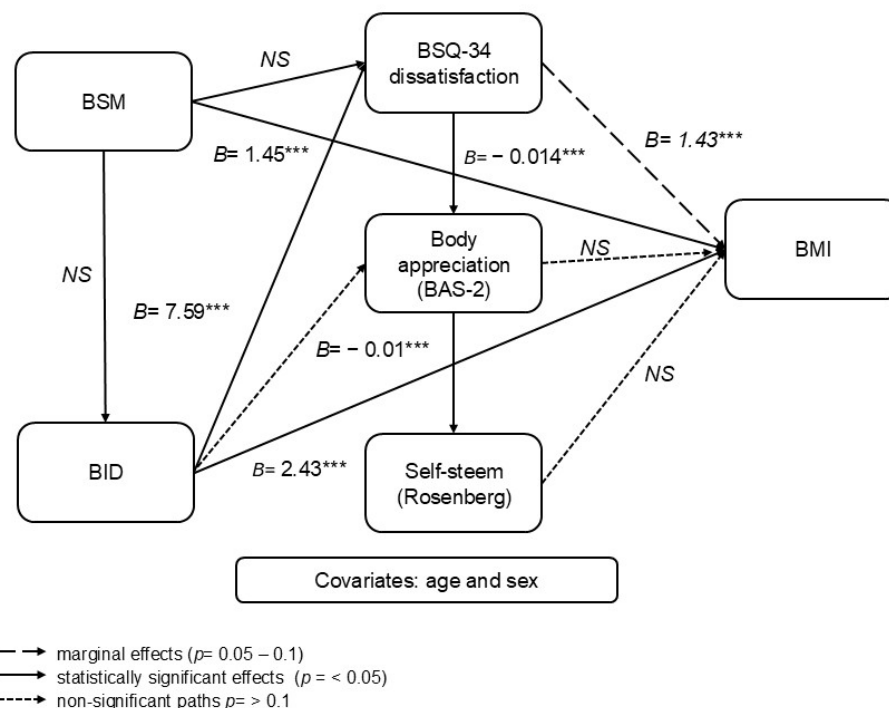


Figure 1. Dual-path model of body Image and BMI (integrated mediation analysis). The model illustrates two independent body-image pathways associated with BMI after adjustment for age and sex. BSM and BDI were independently associated with higher BMI ($B = 1.70$, $p = 0.019$ and $B = 1.45$, $p < 0.001$). BID was positively associated with body image concern (BSQ-34), while body image concern was negatively associated with body appreciation and self-esteem. Neither BSM nor BID was significantly associated with the other constructs, and no significant indirect effects of BSM or BID on BMI were observed through the body image and psychological variables. (***) $p < 0.01$, (NS) = Not statistically significant.

4. Discussion

This study explored body size misperception and body image dissatisfaction among Mexican adults living with obesity, examining their relationships with BMI and psychological components of body image. The main findings revealed a high prevalence of overweight and obesity, accompanied by BSM and BID, despite generally normal levels of self-esteem and body appreciation. Higher BMI, body fat percentage and perceived current body size were positively associated with greater body image concern (BSQ-34; $p < 0.05$). The mediation models further showed distinct patterns of association. BSM was directly associated with BMI, while no significant indirect effect through the evaluated psychological components was observed. In contrast, BID was associated with BMI and showed significant associations with body concern and body appreciation, while it was not significantly associated with BSM. Taken together, these findings suggest that BSM and BID are related to BMI through distinct patterns of association, supporting their consideration as separate dimensions of body image in adults living with obesity.

As a main finding, the study population consisted predominantly of individuals with overweight or obesity, including a subgroup of elevated adiposity despite having a normal BMI. Body size misperception was identified, characterized by an underestimation of actual

adiposity, coexisting with a high prevalence of body dissatisfaction. These findings may reflect, on the one hand, a process of perceptual adaptation driven by the normalization of overweight and obesity in high-prevalence settings, as reported in previous studies [15,36]. This may promote a recalibration of body size norms, in which larger body sizes are perceived as typical, along with an emotional response that potentially contributes due to the internalization of dissatisfaction as part of self-evaluation. On the other hand, the results may reflect response bias during self-assessments such as social desirability or fear of judgment, which could lead participants to select less corpulent body figures [37]. In both cases, the underestimation of actual adiposity through body shape represents a central issue, as it may reduce perceived health risk and delay the pursuit of medical care.

Regarding psychological variables, body appreciation was positively correlated with self-esteem, while both constructs were inversely associated with BID. However, neither was significantly associated with BMI or body fat percentage. Historically, body image in individuals with obesity has been linked to psychological distress, including low self-esteem, reduced body appreciation, depression, internalized weight bias, and disordered eating [38–40]. Accordingly, various interventions have targeted these psychological dimensions, although they typically do not produce changes in BMI [41–43]. In this context, our findings suggest that individuals with obesity may maintain positive self-esteem and body appreciation despite experiencing BID; therefore, interventions aimed solely at improving these psychological aspects might not translate into the behaviors necessary to alter the course of the disease in the context of a therapeutic attempt. This apparent dissociation may represent a relevant target for the development of more comprehensive therapeutic strategies.

The mediation analysis represents a central contribution to this study; in the first place, our findings indicate that the psychological components of body image do not mediate the association between BSM or BID and BMI, suggesting that these constructs are not organized within a single linear explanatory pathway in this analytical framework. This pattern aligns with prior evidence conceptualizing body image as a multidimensional construct, in which evaluative and affective components may function relatively independently from anthropometric indicators [44]. A plausible explanation is that BMI, as a global proxy of adiposity, does not adequately capture the subjective experience of the body, which is shaped by dynamic and temporal factors [45]. Additionally, interventions aimed at enhancing body acceptance and appreciation have been shown to improve psychological well-being without necessarily producing concurrent changes in body weight [46,47], supporting the dissociation observed in our results. Collectively, these findings suggest that positive body image may coexist with body dissatisfaction and across different BMI levels, even in the context of weight change.

This study has several strengths; it integrates multiple dimensions of body image (including perceptual, cognitive and affective) using validated instruments within a unified analytical framework. This comprehensive approach allows for a more nuanced characterization of body image beyond traditional unidimensional assessments. In addition, the inclusion of objective measures of adiposity, such as body mass index (BMI) and body fat percentage (BFP), strengthens the analysis by enabling direct comparison between subjective perception and physiological indicators. Furthermore, the use of mediation models provides an exploratory framework to examine the interrelationships among body image components and anthropometric variables, contributing to a more integrative understanding of these constructs in an underrepresented population.

However, some limitations should be acknowledged, such as the cross-sectional design, which precludes establishing causal relationships or temporal directionality among variables, and the exclusive use of a population from a single region of Mexico may

limit the representativeness and generalizability of the results; therefore, the mediation models should be interpreted as analytical representations of associations rather than causal pathways. Additionally, unmeasured factors such as cultural norms, media exposure, or prior weight-loss experiences may influence body image and were not captured in this study. Although mediation models were specified to explore potential pathways between body image constructs and BMI, the absence of significant indirect effects suggests that these relationships are better understood as independent associations within a multidimensional framework. Accordingly, these models should be interpreted as representations of inter-variable relationships rather than evidence of underlying causal mechanisms. Future studies should recruit participants from multiple regions across Mexico to improve the representativeness and generalizability of the findings.

5. Conclusions

In this study of Mexican adults with overweight and obesity, body image was primarily characterized by body size misperception and body dissatisfaction, both of which were independently associated with BMI, with no evidence of mediation by psychological components such as body appreciation or self-esteem. These findings suggest a partial dissociation between objective adiposity and affective or cognitive dimensions of body image, supporting the view of body image as a multidimensional construct with relatively independent components. From a clinical and public health perspective, these results highlight the importance of incorporating body image assessment into obesity management; however, further longitudinal and interventional studies are needed to clarify the directionality and clinical implications of these relationships.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/obesities6050064/s1>.

Funding: This research received no external funding.

Institutional Review Board Statement: The study protocol was approved by the Local Health Research Committee 1001 of Instituto Mexicano del Seguro Social, on 29 July 2025 with registration number R-2025-1001-076 and was conducted in accordance with the Declaration of Helsinki.

Informed Consent Statement: All participants provided written informed consent prior to enrollment.

Data Availability Statement: The datasets presented in this article are not readily available because authorization for data transfer was not requested from participants at the start of the study. Requests to access the datasets should be directed to the corresponding author to evaluate the ethical disposition of the data.

Conflicts of Interest: The author declares no conflicts of interest.

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