

Predicting Body Dissatisfaction Among Young Women Using Random Forest Based on Social Media, Appearance, and Self-Evaluation Features

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Article Info

Article type:

Original Research

How to cite this article:

Batbayar, E., Sargsyan, A., & Radonjić, I. (2026). Predicting Body Dissatisfaction Among Young Women Using Random Forest Based on Social Media, Appearance, and Self-Evaluation Features. *Psychology of Woman Journal*, 7(4), 1-17. <http://dx.doi.org/10.61838/kman.pwj.6196>



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ABSTRACT

Objective: This study aimed to predict body dissatisfaction among young women in Armenia using a Random Forest model based on social media-related, appearance-related, self-evaluation, demographic, and body-related features.

Methods and Materials: This quantitative cross-sectional predictive study included 412 young women aged 18–29 years residing in Armenia. Participants were recruited through universities, workplaces, community settings, and online platforms. Body dissatisfaction was assessed using the Body Shape Questionnaire-16A, while predictor variables included daily social media use, appearance-focused content exposure, social media appearance comparison, photograph editing and filtering, importance of online feedback, general appearance comparison, perceived attractiveness, body-shape satisfaction, current–ideal appearance discrepancy, appearance-related social pressure, global self-esteem, appearance-contingent self-evaluation, and body mass index. A Random Forest regression model was developed using an 80% training and 20% independent test split. Five-fold cross-validation was used for hyperparameter optimization. Model performance was evaluated using R^2 , mean absolute error (MAE), and root mean squared error (RMSE), and permutation feature importance was used to identify the strongest predictors.

Findings: The Random Forest model demonstrated satisfactory predictive accuracy, explaining 61% of the variance in body dissatisfaction during cross-validation and 64% in the independent test sample ($R^2 = .64$, MAE = 7.21, RMSE = 9.36). General appearance comparison was the strongest predictor, producing a .119 decrease in R^2 after permutation, followed by body-shape satisfaction (.104), appearance-contingent self-evaluation (.092), social media appearance comparison (.081), current–ideal appearance discrepancy (.069), and global self-esteem (.057). Partial dependence analyses indicated nonlinear increases in predicted body dissatisfaction at moderate-to-high levels of appearance comparison, appearance-contingent self-evaluation, and social media appearance comparison, while greater body-shape satisfaction was associated with lower predicted dissatisfaction.

Conclusion: Body dissatisfaction in women can be predicted with substantial accuracy from an integrated set of appearance, self-evaluation, and social media-related characteristics, with psychological comparison and subjective appearance evaluation contributing more strongly than general social media exposure or body size alone.

Keywords: body dissatisfaction; social media; appearance comparison; self-esteem; self-evaluation; Random Forest; machine learning; young women

1. Introduction

Body dissatisfaction has emerged as an increasingly important psychological and public health concern among young women, particularly within social environments in which physical appearance is continuously displayed, evaluated, compared, and socially reinforced. Body dissatisfaction generally refers to negative subjective evaluations of one's body, including dissatisfaction with body shape, weight, size, facial appearance, or other physical characteristics, and may reflect a perceived discrepancy between one's actual and ideal appearance. Although concerns about physical appearance are not new, contemporary digital environments have substantially altered the intensity, frequency, and social visibility of appearance-related experiences. Social networking platforms provide a continuous stream of photographs, videos, beauty-related content, fitness imagery, lifestyle presentations, peer feedback, and celebrity or influencer portrayals that may shape how individuals evaluate their own bodies. Consequently, body image is increasingly constructed not only through direct interpersonal encounters but also through highly visual and algorithmically curated digital environments in which appearance becomes publicly displayed and socially measurable (Siddegowda et al., 2022; Wang et al., 2023).

Young women may be particularly vulnerable to these processes because appearance remains closely connected to social evaluation, femininity norms, perceived attractiveness, and self-worth in many sociocultural settings. Social media can intensify these pressures by making idealized bodies highly accessible and by creating repeated opportunities for upward social comparison. Highly visual platforms may expose users to carefully selected, edited, filtered, or professionally produced images that are difficult to distinguish from ordinary self-presentation. Such content can normalize narrow standards of beauty and create expectations concerning thinness, fitness, facial features, skin, clothing, and overall attractiveness. Research examining highly visual social media has therefore increasingly focused on its association with body image concerns, disordered eating, and appearance-related psychological distress (Sharma & Vidal, 2023). Broader reviews have similarly concluded that social media use is meaningfully associated with body image and eating-related concerns among young people, although the magnitude and direction of associations may vary according to platform,

content, user characteristics, and type of engagement (Dane & Bhatia, 2023).

The psychological relevance of social media appears to extend beyond mere exposure time. Different forms of engagement may produce different outcomes because passive viewing, active posting, appearance comparison, feedback seeking, content creation, image editing, and following appearance-focused influencers involve distinct cognitive and emotional mechanisms. Accordingly, recent research has increasingly emphasized the need to move beyond general indicators such as daily screen time and examine the specific processes through which online experiences affect body image. For example, work on time spent on social media has shown that duration of use may be associated with body image concerns, but exposure time alone is unlikely to capture the complexity of individual psychological responses (Malhotra et al., 2025). Evidence concerning adolescents and adults also indicates that social media effects depend substantially on how platforms are used, what content is consumed, and how users interpret and incorporate online experiences into their self-concepts (Koh et al., 2024; Markey et al., 2025).

Appearance comparison is one of the most plausible mechanisms connecting social media use with body dissatisfaction. Social comparison processes occur when individuals evaluate their own attributes relative to those of others, and visual social media can dramatically expand the number of available comparison targets. Young women may compare themselves not only with friends and acquaintances but also with models, celebrities, influencers, fitness personalities, and highly curated representations of ordinary users. Frequent exposure to idealized comparison targets may increase awareness of perceived physical shortcomings and strengthen discrepancies between actual and ideal appearance. Research involving female social media users has found that viewing influencers may be associated with intentions to modify appearance, indicating that online comparison can potentially translate into behavioral responses directed toward changing the body or physical presentation (Pan et al., 2022). Similarly, sociocultural attitudes toward appearance and problematic engagement with social networking environments appear to be closely interconnected among young adults (Perveen, 2024).

The impact of appearance-oriented digital content may be especially pronounced when users internalize the standards they encounter. Internalization refers to accepting socially promoted appearance ideals as personally relevant standards

against which one's own body should be judged. Once such standards become internalized, repeated exposure to idealized images may produce dissatisfaction even when individuals recognize that many images are edited or selectively presented. The risks are particularly evident in communities or content streams that actively promote restrictive beauty ideals. For example, exposure to pro-anorexia content on TikTok has been shown to negatively affect body image and increase internalization of societal beauty standards (Blackburn & Hogg, 2024). Research on fitspiration content has likewise highlighted the possibility that ostensibly health-oriented fitness imagery may generate appearance pressure, comparison, perfectionistic standards, and body-related concerns when idealized physiques are emphasized over realistic health behaviors (Xu, 2024).

TikTok and similar short-form video platforms have become particularly important in this context because their recommendation systems can repeatedly deliver personalized appearance-related content. Such environments may facilitate rapid and repeated exposure to dieting, weight-loss, fitness, cosmetic, and body-focused messages. At the same time, social media cannot be conceptualized exclusively as harmful, because it may also be used to disseminate supportive, recovery-oriented, body-positive, or healthy eating content. Recent scholarship has therefore stressed the dual role of platforms such as TikTok and Instagram, which can potentially promote both harmful appearance ideals and constructive health information among users at risk for eating disorders and body dissatisfaction (Orsolini et al., 2026). Likewise, work focused specifically on TikTok and eating disorders suggests that the platform may simultaneously create risks and opportunities for prevention, intervention, psychoeducation, and treatment engagement (Kruger et al., 2026). This duality underscores the importance of analyzing not merely platform use, but the psychological meaning and specific type of content encountered by users.

The relationship between social media and body dissatisfaction also intersects with broader concerns regarding mental health and emotional well-being. High levels of screen exposure have been associated with concerns about adolescent psychological functioning, leading to calls for greater public health attention to digital behavior and online environments (Álvarez-Mon et al., 2024). Reviews of social media addiction and mental health likewise describe a complex pattern in which online platforms may provide social connection and information while simultaneously contributing to distress, problematic

use, social comparison, and psychological vulnerability (Awopetu et al., 2024). Problematic internet use may also overlap with eating-related psychopathology, suggesting that excessive or dysregulated digital engagement can become embedded within broader patterns of emotional and behavioral difficulty (Ruiz-Centeno et al., 2025). These associations are important because body dissatisfaction is itself linked to multiple adverse outcomes, including low self-esteem, unhealthy weight-control behaviors, eating pathology, anxiety, depressive symptoms, and reduced quality of life.

The broader literature on social media and eating disorders further illustrates the significance of body-related digital experiences. Social media may reinforce dieting culture, weight stigma, appearance surveillance, and unhealthy eating behaviors by repeatedly exposing users to content that idealizes particular body types or frames food and exercise in moralized terms (Gao, 2023). Studies of healthy eating movements online have also raised concerns that apparently positive health messaging can create psychological pressure when health is visually associated with thinness, control, or idealized bodies (Zaharia & Gonța, 2024). Among individuals already vulnerable to dissatisfaction or disordered eating, such messaging may reinforce rigid standards rather than support flexible and sustainable health behaviors. This is consistent with broader concerns about current challenges to adolescent and youth well-being, where digital exposure forms part of a complex network of social, psychological, and developmental influences (Jeevar et al., 2022).

Body image experiences are also shaped by negative social feedback and online appearance-based judgment. Social media creates a public environment in which images can be liked, commented upon, ranked, shared, criticized, or ignored, potentially increasing the salience of external evaluation. Negative evaluations may be particularly harmful when users derive self-worth from appearance or social approval. Research examining women's mental health in relation to negative social media evaluation indicates that adverse feedback can contribute to psychological distress and reinforce concerns about appearance and social acceptance (Xiao-long, 2023). Online body shaming represents an especially direct form of appearance-related aggression, and systematic review evidence has emphasized its potential consequences for self-esteem, body image, emotional health, and social functioning (Kudlová et al., 2024). These findings suggest that social media-related body dissatisfaction may emerge not only from idealized

comparison targets but also from perceived scrutiny, rejection, criticism, and anticipated judgment.

Self-esteem and broader self-evaluative processes may therefore be central to understanding individual differences in vulnerability. Individuals with lower global self-esteem may rely more heavily on external validation, interpret appearance-related feedback more negatively, or experience greater emotional consequences when they perceive themselves as failing to meet social standards. Studies of young social media users have found meaningful relationships among body esteem, self-esteem, and loneliness, supporting the view that body image should be understood within a broader system of self-evaluation and psychosocial functioning (Pop et al., 2022). Earlier research has similarly identified gender-related differences in body consciousness, lifestyle patterns, and social network use, suggesting that social and psychological meanings attached to appearance may differ across groups (Pop et al., 2021). Among young women specifically, social media use has been associated with both body image perceptions and self-esteem, reinforcing the need to consider these variables simultaneously rather than independently (Goyal & G., 2024).

A related construct is self-concept, which refers to the broader organization of beliefs and evaluations individuals hold about themselves. Social media can influence self-concept by presenting continuous opportunities for comparison, self-presentation, external feedback, and identity performance. A scoping review of social media and self-concept among postsecondary students highlighted the complex ways in which online engagement may affect self-perception and identity-related processes (Rafiq & Linden, 2024). Self-concept clarity may be particularly relevant because individuals with less stable or less clearly defined self-beliefs may be more susceptible to external appearance standards. Recent findings among young Chinese women indicate that social networking site use can exacerbate appearance anxiety and that self-concept clarity plays an important moderating role in this association (Hu et al., 2026). These findings imply that the consequences of social media exposure depend partly on the psychological structure through which users interpret appearance-related information.

Other internal psychological resources may function protectively. Self-compassion, for example, involves responding to perceived inadequacies with kindness, common humanity, and balanced awareness rather than harsh self-criticism. A recent scoping review identified self-

compassion as a potentially important protective factor against adverse consequences associated with social media use (Manjanatha et al., 2025). This is theoretically relevant to body dissatisfaction because individuals who evaluate themselves less harshly may be less likely to convert appearance comparison into persistent self-rejection. Accordingly, the interaction between external digital experiences and internal self-evaluative characteristics may be more informative than studying either domain alone.

Appearance anxiety represents another important link between social evaluation and body dissatisfaction. Young individuals who anticipate negative judgments concerning their appearance may engage in more surveillance, comparison, reassurance seeking, and self-presentation management. Research examining celebrity-related influences and appearance anxiety has highlighted the role of socially valued public figures in shaping adolescents' concerns about physical attractiveness (Xia, 2024). Similar concerns have been identified across diverse cultural settings. Research among young adults in Pakistan has emphasized the role of contemporary social media in shaping body image concerns within a culturally specific environment (Fatima, 2025), while a literature review focused on Arab countries likewise documented associations between social media, body image, and eating disorders (Naji et al., 2025). Findings from Malawi further suggest that social media-related body image concerns are not confined to Western or high-income settings and may emerge across different sociocultural contexts (Hajat, 2024). Taken together, these studies suggest that sociocultural context shapes the content and meaning of beauty standards, but the underlying mechanisms of comparison, internalization, feedback, and self-evaluation may operate across diverse populations.

The role of appearance-oriented social media extends beyond dissatisfaction to attitudes toward cosmetic modification. Exposure to highly visual content may normalize cosmetic enhancement and make appearance alteration seem increasingly accessible or socially expected. Recent work examining TikTok has linked platform-related body image processes with acceptance of cosmetic surgery, demonstrating how digital appearance norms may influence not only self-perception but also attitudes toward modifying one's body (Dajches et al., 2025). Such findings are consistent with the broader idea that dissatisfaction may function along a continuum, ranging from negative self-evaluation to behavioral efforts intended to reduce perceived discrepancies between actual and ideal appearance.

Importantly, research on body image and social media has not been limited to women. A systematic review focused on men found associations among social media use, body image, physical activity, and anabolic-androgenic steroid use, indicating that digital appearance pressures can influence multiple populations, although the specific ideals and behaviors involved may differ by gender (Beos et al., 2025). Nevertheless, young women remain a particularly important group for investigation because thinness, attractiveness, facial appearance, and socially rewarded femininity continue to be salient components of many online beauty norms. Research trends across different social media platforms further indicate that body image has become a rapidly expanding interdisciplinary topic involving psychology, health, communication, and digital behavior (Wang et al., 2023).

Despite the growing body of evidence, several limitations remain in the existing literature. Many studies rely on conventional correlational analyses that examine the isolated association between a small number of predictors and body dissatisfaction. Such approaches are valuable for testing theoretically specified relationships but may be less capable of capturing complex nonlinear associations, threshold effects, or interactions among multiple psychological and behavioral features. Body dissatisfaction is unlikely to arise from a single factor; rather, it may reflect a multidimensional combination of social media exposure, appearance comparison, perceived attractiveness, body-shape satisfaction, internalized ideals, self-esteem, self-concept, body mass index, appearance-related feedback, and self-evaluative tendencies. Systematic reviews of social media and body dissatisfaction repeatedly demonstrate considerable heterogeneity in findings, which may partly reflect the interaction of these multiple dimensions (Digennaro & Tescione, 2024). Consequently, analytical methods capable of modeling nonlinear and higher-order relationships may provide additional insight.

Machine-learning approaches offer one potential solution to this methodological challenge. Random Forest algorithms are particularly suitable for multidimensional psychological data because they can accommodate numerous predictors, model nonlinear relationships, capture complex interactions, and provide estimates of feature importance without requiring strong assumptions regarding functional form. In the context of body dissatisfaction, this approach can shift the analytic emphasis from examining whether a single variable is statistically associated with dissatisfaction to determining which combination of social media,

appearance-related, and self-evaluation characteristics most accurately predicts individual differences in body dissatisfaction. Such an approach is especially useful when theoretical evidence suggests that variables may operate jointly rather than independently. For example, exposure to idealized content may be more consequential among users who frequently compare their appearance, have low self-esteem, or base their self-worth strongly on physical attractiveness. Similarly, the predictive role of body mass index may depend on subjective body-shape satisfaction rather than objective body size alone.

The need for multifactorial prediction is reinforced by the rapidly changing digital environment. Platforms, algorithms, content formats, and user behaviors evolve quickly, meaning that predictors identified in earlier social media research may not fully capture contemporary patterns of engagement. Short-form videos, algorithmically personalized feeds, influencer culture, beauty filters, artificial enhancement, fitness content, and public appearance evaluation have transformed the contexts in which young women encounter and interpret body-related information. Current scholarship increasingly recognizes this changing landscape and emphasizes the importance of identifying platform-specific and psychologically meaningful mechanisms rather than treating social media as a homogeneous exposure (Kruger et al., 2026; Orsolini et al., 2026). At the same time, existing studies remain geographically concentrated, and there is comparatively limited evidence from Armenia and the broader South Caucasus region. Examining Armenian young women can therefore extend the literature by evaluating whether social media, appearance-related, and self-evaluative characteristics jointly predict body dissatisfaction in a cultural context that has received relatively little empirical attention.

Accordingly, the aim of this study was to predict body dissatisfaction among young women in Armenia using a Random Forest model based on social media-related, appearance-related, and self-evaluation features.

2. Methods and Materials

2.1. Study design and Participant

This study employed a quantitative, cross-sectional predictive design to develop and evaluate a machine-learning model for predicting body dissatisfaction among young women based on social media-related behaviors, appearance-related characteristics, and self-evaluation features. The study population consisted of young women

residing in Armenia. A total of 412 women aged 18 to 29 years participated in the study. Participants were recruited from universities, educational institutions, workplaces, and community settings in Yerevan and other urban areas of Armenia using convenience and online recruitment methods. Recruitment advertisements containing a brief description of the study and a link to the electronic questionnaire were distributed through university networks and commonly used social media platforms. Eligibility criteria included being female, being between 18 and 29 years of age, currently residing in Armenia, having an active account on at least one social media platform, using social media on a regular basis during the previous six months, and being able to read and respond to the study questionnaire. Participants were excluded if they submitted substantially incomplete questionnaires, provided inconsistent responses to key demographic or screening questions, or failed to complete the primary outcome measure. Duplicate electronic submissions were also screened and removed prior to statistical analysis. Participation was voluntary, and respondents were informed about the objectives of the research, confidentiality of their responses, and their right to discontinue participation at any stage without penalty. Electronic informed consent was obtained before access to the questionnaire was provided. No personally identifying information was included in the analytical dataset, and the collected data were used exclusively for research purposes. The final analytical sample consisted of all 412 eligible participants with sufficiently complete data for the construction and evaluation of the predictive model.

2.2. Measures

Data were collected using a structured questionnaire comprising demographic characteristics, social media-related variables, appearance-related indicators, self-evaluation measures, and a measure of body dissatisfaction. Body dissatisfaction, which served as the primary outcome variable, was assessed using the Body Shape Questionnaire-16A (BSQ-16A). The instrument consists of 16 items assessing concerns about body shape, feelings of being overweight, avoidance behaviors, discomfort with physical appearance, and negative emotional responses to perceived body-related imperfections. Participants rated the frequency of these experiences on a six-point response scale ranging from “never” to “always.” Item scores were summed to obtain an overall body dissatisfaction score, with higher scores indicating greater concern and dissatisfaction with

body shape. The continuous total score was retained as the primary target variable for the Random Forest regression model because preserving the full variability of the outcome provides more information than converting body dissatisfaction into arbitrary categorical groups.

Social media-related features were measured through items assessing the frequency, duration, and behavioral characteristics of social media use. Participants reported their average daily time spent on social media, number of social media platforms used regularly, frequency of checking social media accounts, frequency of posting photographs or videos of themselves, frequency of viewing appearance-focused content, degree of engagement with beauty, fashion, fitness, weight-loss, and lifestyle content, and perceived importance of receiving likes, comments, and other forms of online feedback. Particular attention was given to image-centered social media activities because exposure to idealized photographs and videos may provide opportunities for appearance comparison and appearance-based self-evaluation. Participants were therefore asked about the frequency with which they compared their physical appearance with influencers, celebrities, acquaintances, friends, and other social media users. They were also asked whether viewing social media content made them feel more satisfied or dissatisfied with their own appearance and how frequently they edited, filtered, retouched, or selectively presented photographs before uploading them. These variables were included as individual predictive features rather than being reduced to a single global social media exposure score, allowing the machine-learning algorithm to identify the relative contribution of different patterns of online behavior.

Appearance-related characteristics included perceived physical attractiveness, satisfaction with facial appearance, satisfaction with body shape, perceived discrepancy between current and ideal appearance, frequency of appearance comparison, concern about weight, and perceived pressure to conform to socially valued appearance standards. Appearance comparison tendencies were assessed using items based on the Physical Appearance Comparison Scale-Revised, which captures the extent to which individuals compare their appearance with that of other people in everyday and social contexts. Higher scores represented a stronger tendency toward appearance-based social comparison. Participants additionally rated the importance they attached to physical appearance and the extent to which they believed appearance influenced their social acceptance, interpersonal relationships, and personal value. Self-

reported height and weight were collected and used to calculate body mass index as weight in kilograms divided by height in meters squared. Body mass index was treated as a continuous predictor because actual or perceived body size may contribute to individual differences in body dissatisfaction.

Self-evaluation features were assessed primarily through global self-esteem, perceived self-worth, and appearance-contingent self-evaluation. Global self-esteem was measured using the Rosenberg Self-Esteem Scale, a 10-item instrument assessing positive and negative evaluations of the self. Participants responded to each statement using a four-point Likert-type scale, and negatively worded items were reverse-scored before calculation of the total score. Higher total scores represented greater global self-esteem. Additional items assessed the degree to which participants' judgments of their personal worth depended on physical attractiveness, body shape, positive appearance-related feedback from others, and approval received through social media. These variables were included because body dissatisfaction may be particularly pronounced among individuals whose global self-evaluation is strongly contingent upon perceived physical appearance. Demographic and background variables, including age, educational level, employment status, relationship status, place of residence, and self-reported body mass index, were also recorded and considered as potential contextual predictors. Before analysis, all multi-item scales were examined for internal consistency, and total or mean scores were calculated according to their standard scoring procedures. Higher scores were consistently coded to reflect higher levels of the construct represented by each predictor whenever applicable.

2.3. Data Analysis

Data analysis was performed using Python and appropriate machine-learning and statistical analysis libraries. Initial data screening included examination of missing values, duplicate records, response ranges, extreme observations, and the distributions of continuous variables. Descriptive statistics were calculated to characterize the sample and all predictors. Continuous variables were summarized using means, standard deviations, medians, and observed ranges when appropriate, whereas categorical variables were summarized using frequencies and percentages. Scale reliability was examined using Cronbach's alpha, with coefficients of .70 or greater

considered indicative of acceptable internal consistency. Missing values occurring in predictor variables were handled within the analytical preprocessing procedure using median imputation for continuous variables and the most frequent category for categorical variables. Categorical predictors were transformed into machine-readable indicator variables when required. Because decision tree-based Random Forest algorithms are not dependent on the scale of predictor variables, standardization of continuous variables was not required for the primary predictive analysis.

A Random Forest regression algorithm was used to predict participants' continuous body dissatisfaction scores from the full set of social media, appearance, self-evaluation, demographic, and body-related features. Before model training, the dataset was randomly divided into a training set containing 80% of participants and an independent test set containing the remaining 20%. The training dataset was used exclusively for model development and hyperparameter optimization, whereas the test dataset was withheld until the final evaluation in order to provide a less biased estimate of the model's generalization performance. During model development, five-fold cross-validation was conducted within the training sample. The principal Random Forest hyperparameters considered during tuning included the number of decision trees, maximum tree depth, minimum number of observations required to split an internal node, minimum number of observations required in a terminal node, and the number or proportion of predictor variables considered at each split. Candidate hyperparameter combinations were compared according to cross-validated prediction error, and the configuration providing the best predictive performance was selected for the final model. A sufficiently large ensemble of trees was retained to stabilize prediction estimates and feature-importance rankings.

Final predictive performance was assessed in the independent test set using the coefficient of determination (R^2), mean absolute error (MAE), and root mean squared error (RMSE). R^2 was used to quantify the proportion of variability in body dissatisfaction explained by the model, whereas MAE represented the average absolute difference between observed and predicted scores and RMSE provided an error metric that assigned greater weight to larger prediction errors. Training and test performance were compared to evaluate potential model overfitting. The contribution of individual predictors was subsequently examined using permutation feature importance, which quantified the deterioration in predictive performance produced by randomly disrupting each feature while holding

the remaining predictors unchanged. Features producing larger increases in prediction error were interpreted as having greater predictive importance. To provide further interpretation of the direction and pattern of associations identified by the machine-learning model, the most influential predictors were examined using partial dependence and model-based feature-effect analyses. These procedures were used to determine whether important predictors were associated with approximately linear, threshold, nonlinear, or interaction-dependent changes in predicted body dissatisfaction. Because the primary objective of the study was predictive rather than causal, feature importance was interpreted as evidence of predictive contribution and was not considered proof that a given variable caused body dissatisfaction. All analyses were conducted using two-sided statistical procedures where inferential statistics were applicable, with a significance level of $p < .05$.

3. Findings and Results

A total of 412 young women from Armenia were included in the final analysis. Participants ranged in age from 18 to 29 years, with a mean age of 23.41 years ($SD = 3.17$). Most participants were between 21 and 25 years of age. Regarding educational status, 76 participants (18.45%) had completed secondary education or were currently enrolled in post-secondary preparatory programs, 223 (54.13%) were undergraduate students or held a bachelor's degree, and 113 (27.43%) were enrolled in or had completed postgraduate education. With respect to employment status, 164 participants (39.81%) were students without regular

employment, 181 (43.93%) were employed either full-time or part-time, and 67 (16.26%) were not employed at the time of data collection. A total of 241 participants (58.50%) reported being single, 137 (33.25%) were in a romantic relationship, and 34 (8.25%) were married. Most participants resided in Yerevan ($n = 287$, 69.66%), whereas 125 participants (30.34%) lived in other urban areas of Armenia. The mean self-reported body mass index was 22.74 kg/m^2 ($SD = 3.89$), with observed values ranging from 16.48 to 35.72 kg/m^2 . Participants reported using social media for an average of 4.38 hours per day ($SD = 1.92$), and the mean number of social media platforms used regularly was 3.46 ($SD = 1.21$). The overall descriptive pattern indicated substantial variability in social media exposure, appearance-related comparison, self-esteem, and body dissatisfaction, providing adequate heterogeneity for the subsequent predictive analyses.

Table 1 presents the descriptive statistics for the continuous variables entered into the predictive analysis. The mean body dissatisfaction score was 52.68 ($SD = 15.74$), indicating considerable between-participant variability in dissatisfaction with body shape and appearance. The mean appearance comparison score was 31.42 ($SD = 8.26$), while the mean global self-esteem score was 27.93 ($SD = 5.84$). Participants also demonstrated moderate levels of appearance-contingent self-evaluation, perceived appearance-related social pressure, and frequency of exposure to appearance-focused social media content. Daily social media use averaged more than four hours, and the mean frequency of photograph editing and filtering suggested that appearance-related online self-presentation was relatively common in the sample.

Table 1

Descriptive Statistics for the Main Study Variables (N = 412)

Variable	Mean	SD	Minimum	Maximum
Body dissatisfaction	52.68	15.74	20.00	92.00
Daily social media use, hours	4.38	1.92	0.75	9.50
Appearance-focused content exposure	18.76	5.43	6.00	30.00
Social media appearance comparison	21.94	6.18	7.00	35.00
Photograph editing/filtering frequency	12.27	4.39	4.00	20.00
Importance of likes and comments	11.63	4.12	4.00	20.00
General appearance comparison	31.42	8.26	11.00	50.00
Perceived physical attractiveness	5.64	1.79	1.00	10.00
Satisfaction with body shape	5.19	1.96	1.00	10.00
Current-ideal appearance discrepancy	4.87	2.01	1.00	10.00
Appearance-related social pressure	18.43	5.21	6.00	30.00
Global self-esteem	27.93	5.84	12.00	40.00
Appearance-contingent self-evaluation	19.68	5.57	6.00	30.00
Body mass index, kg/m^2	22.74	3.89	16.48	35.72

As shown in Table 1, body dissatisfaction displayed a sufficiently broad range for regression-based prediction,

with scores extending from 20.00 to 92.00. Several theoretically relevant predictors also showed substantial

dispersion. In particular, general appearance comparison, appearance-focused content exposure, social media appearance comparison, and appearance-contingent self-evaluation exhibited relatively large standard deviations, indicating meaningful individual differences in the extent to which participants evaluated themselves against external appearance standards. Perceived physical attractiveness and satisfaction with body shape were centered slightly above the midpoint of their response ranges, whereas current-ideal appearance discrepancy and perceived appearance-related social pressure showed moderate average levels. Global self-esteem was relatively high on average but varied considerably across respondents. The observed variability across the principal predictor variables supported their inclusion in the Random Forest model because machine-learning algorithms require sufficient heterogeneity in

predictor values to identify meaningful predictive patterns and nonlinear relationships.

The Random Forest regression model was developed using 80% of the sample for training and hyperparameter optimization and 20% for independent testing. The random partition produced 330 participants in the training set and 82 participants in the test set. Five-fold cross-validation was conducted within the training sample to select the optimal model configuration. The final model consisted of 500 decision trees, a maximum tree depth of 10, a minimum of four observations required to split an internal node, a minimum of two observations per terminal node, and a feature-sampling parameter equal to the square root of the total number of available predictors. Performance indices for the cross-validation, training, and independent test stages are presented in Table 2.

Table 2

Predictive Performance of the Random Forest Regression Model

Model Evaluation Stage	R ²	MAE	RMSE
Five-fold cross-validation	.61	7.49	9.71
Training sample	.82	5.12	6.63
Independent test sample	.64	7.21	9.36

The results presented in Table 2 indicate that the Random Forest model achieved satisfactory predictive performance. During five-fold cross-validation, the model explained approximately 61% of the variance in body dissatisfaction, with an MAE of 7.49 and an RMSE of 9.71. Performance was stronger in the training sample, where the model accounted for 82% of the variance and produced an MAE of 5.12 and an RMSE of 6.63. Most importantly, evaluation in the independent test sample yielded an R² of .64, indicating that approximately 64% of the variability in body dissatisfaction among previously unseen participants was explained by the combination of social media, appearance, self-evaluation, demographic, and body-related predictors. The test MAE of 7.21 indicated that the model's predictions differed from participants' observed body dissatisfaction scores by approximately 7.21 points on average, whereas the

RMSE of 9.36 reflected somewhat larger errors for a smaller proportion of participants. Although training performance exceeded test performance, the difference was not sufficiently large to suggest severe overfitting. The similarity between cross-validated and independent test performance further indicated that the predictive model generalized reasonably well beyond the observations used during model development.

Permutation feature importance was used to determine the contribution of each predictor to the model's predictive accuracy. Importance values were calculated as the reduction in model performance produced when the values of a given predictor were randomly permuted in the test data. Larger decreases in R² indicated greater predictive importance. Table 3 presents the ten most influential features identified by the final Random Forest model.

Table 3

Permutation Feature Importance for the Prediction of Body Dissatisfaction

Rank	Predictor	Decrease in R ² After Permutation	Relative Importance (%)
1	General appearance comparison	.119	18.74
2	Satisfaction with body shape	.104	16.38
3	Appearance-contingent self-evaluation	.092	14.49
4	Social media appearance comparison	.081	12.76
5	Current-ideal appearance discrepancy	.069	10.87
6	Global self-esteem	.057	8.98

7	Appearance-focused content exposure	.046	7.24
8	Body mass index	.034	5.35
9	Photograph editing/filtering frequency	.019	2.99
10	Importance of likes and comments	.014	2.20

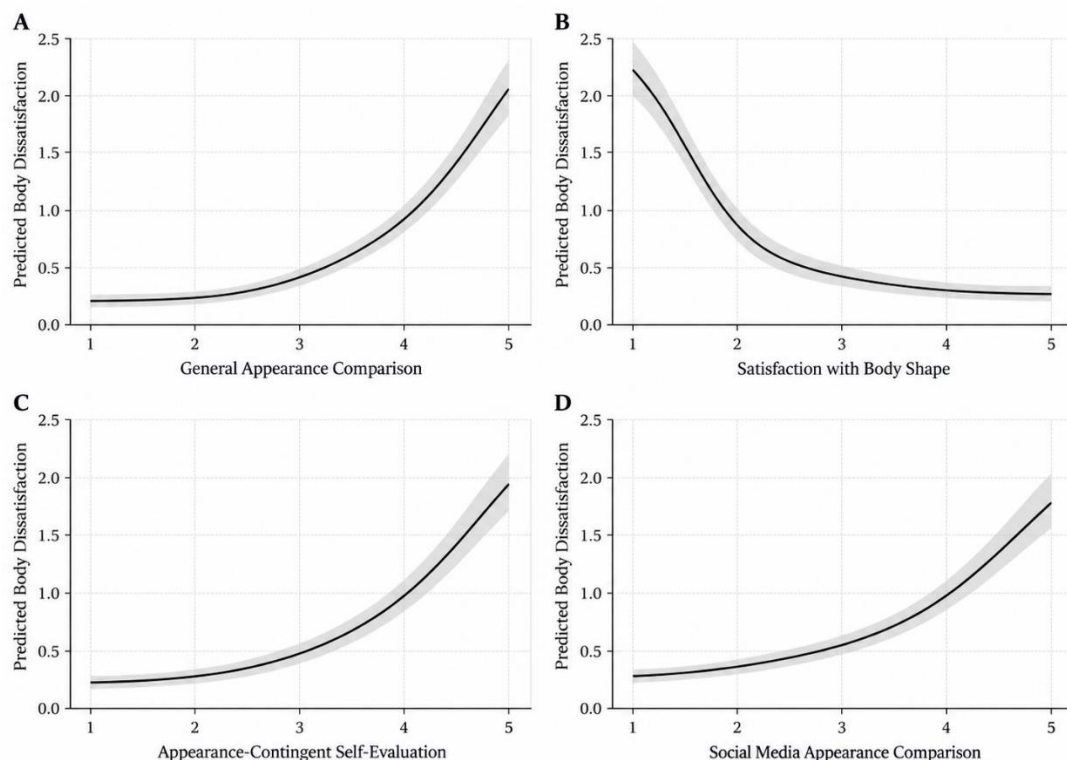
As presented in Table 3, general appearance comparison emerged as the most influential predictor of body dissatisfaction. Permuting this feature produced a .119 reduction in test-set R^2 and accounted for 18.74% of the total relative importance among the ten leading predictors. Satisfaction with body shape was the second most influential variable, followed by appearance-contingent self-evaluation. These findings indicate that the prediction of body dissatisfaction depended strongly on participants' tendency to compare their appearance with others, their subjective evaluation of their own body shape, and the extent to which personal self-worth was contingent upon physical appearance. Social media appearance comparison ranked fourth, accounting for 12.76% of relative predictive importance, demonstrating that comparison processes occurring specifically within social media environments contributed substantially beyond general social media exposure alone. Current-ideal appearance discrepancy was also a prominent predictor, followed by global self-esteem

and exposure to appearance-focused social media content. In contrast, body mass index showed a more moderate contribution, and photograph editing frequency and the importance attributed to likes and comments made smaller but still detectable contributions. This pattern suggests that psychological and evaluative processes related to appearance were more informative for prediction than simple indices of social media usage intensity or physical body size.

To further examine the functional form of the associations learned by the Random Forest model, partial dependence analyses were conducted for the strongest predictors. These analyses were intended to illustrate how predicted body dissatisfaction changed across the observed range of each feature while averaging over the remaining variables. The resulting curves demonstrated pronounced nonlinear relationships for appearance comparison, body-shape satisfaction, appearance-contingent self-evaluation, and social media appearance comparison.

Figure 1

Partial Dependence of Predicted Body Dissatisfaction on the Four Most Important Features



The partial dependence patterns indicated that predicted body dissatisfaction increased progressively as general appearance comparison increased, with the steepest rise occurring among participants with moderate-to-high comparison scores. At lower comparison levels, predicted dissatisfaction remained relatively stable, but beyond approximately the middle of the observed scale, increases in comparison were associated with increasingly elevated predicted dissatisfaction. Satisfaction with body shape showed the opposite pattern: predicted body dissatisfaction declined sharply as satisfaction increased from low to moderate levels and then decreased more gradually at higher levels of body-shape satisfaction. Appearance-contingent self-evaluation demonstrated a positive nonlinear association, such that participants whose self-worth was only weakly tied to appearance had comparatively low predicted dissatisfaction, whereas predicted scores increased markedly once appearance-contingent self-evaluation reached moderate or high levels. Social media appearance comparison showed a similar pattern, with a particularly pronounced increase in predicted body dissatisfaction among participants who frequently compared their bodies or facial appearance with influencers, celebrities, peers, or other social media users. Collectively, these feature-effect patterns indicated that body dissatisfaction was not predicted by isolated linear relationships alone; rather, risk increased more sharply after specific levels of appearance comparison and appearance-based self-evaluation were reached.

Additional inspection of the feature-effect patterns showed that exposure to appearance-focused social media content had a weaker relationship with body dissatisfaction when appearance comparison was low, whereas its predictive effect became more pronounced among participants who reported frequent appearance comparison. Similarly, high global self-esteem was associated with lower predicted body dissatisfaction across most levels of social media use, although this apparent protective pattern was reduced among women who reported both strong appearance-contingent self-worth and high current-ideal appearance discrepancy. Body mass index was positively related to predicted body dissatisfaction, particularly in the upper portion of the observed BMI distribution; however, its contribution remained smaller than that of subjective appearance evaluations. This result indicates that dissatisfaction could not be adequately predicted from body size alone and that subjective interpretation of appearance was considerably more informative to the Random Forest algorithm.

Overall, the findings demonstrated that the Random Forest model was able to predict individual differences in body dissatisfaction with relatively strong out-of-sample accuracy. The strongest predictive signals were concentrated in appearance comparison, dissatisfaction with one's current body shape, appearance-contingent self-evaluation, social media-based appearance comparison, and perceived discrepancy between current and ideal appearance. Variables reflecting general intensity of social media participation, such as time spent online or the number of platforms used, contributed less strongly than variables reflecting how participants psychologically engaged with appearance-related social media content. These findings support the importance of distinguishing between the amount of social media use and the specific cognitive and evaluative processes activated during social media use when predicting body dissatisfaction among young women.

4. Discussion

The present study aimed to predict body dissatisfaction among young women in Armenia using a Random Forest model incorporating social media-related, appearance-related, self-evaluation, demographic, and body-related features. The findings showed that the model achieved satisfactory predictive performance, explaining approximately 64% of the variance in body dissatisfaction in the independent test sample. Among the predictors, general appearance comparison emerged as the most influential feature, followed by satisfaction with body shape, appearance-contingent self-evaluation, social media appearance comparison, current-ideal appearance discrepancy, global self-esteem, appearance-focused content exposure, body mass index, photograph editing and filtering frequency, and the importance attributed to likes and comments. The partial dependence analyses further demonstrated nonlinear relationships, indicating that increases in appearance comparison and appearance-contingent self-evaluation were associated with disproportionately higher predicted body dissatisfaction at moderate-to-high levels, whereas greater satisfaction with body shape was associated with markedly lower predicted dissatisfaction. These findings suggest that body dissatisfaction among young women is best understood not as a simple consequence of time spent on social media or body size alone, but as the outcome of an interconnected system of comparison, internalized appearance standards, subjective body evaluation, and self-worth processes.

The strong overall predictive performance of the Random Forest model supports the assumption that body dissatisfaction is a multifactorial phenomenon that can be meaningfully estimated from a combination of psychological and behavioral characteristics. Previous research has repeatedly shown that social media use is associated with body image concerns, but also that substantial heterogeneity exists in the strength of these associations (Dane & Bhatia, 2023; Digennaro & Tescione, 2024). The current findings provide a possible explanation for this heterogeneity. Rather than treating social media use as a single exposure, the present model incorporated several dimensions of online behavior alongside appearance and self-evaluation variables. This distinction is consistent with research emphasizing that highly visual social media activities, exposure to idealized images, appearance comparison, and content-specific engagement may be more consequential than simple duration of use (Malhotra et al., 2025; Sharma & Vidal, 2023). The ability of the model to explain a substantial proportion of variance suggests that combining these dimensions may provide a more accurate representation of the pathways through which digital environments relate to body dissatisfaction.

General appearance comparison was the strongest predictor in the model. This finding is consistent with social comparison perspectives, according to which individuals evaluate their own characteristics by comparing themselves with others, particularly in domains that are personally and socially salient. Social media provides an exceptionally dense environment for such comparisons because users are repeatedly exposed to highly curated representations of physical appearance. The importance of comparison found in this study is supported by evidence showing that viewing social media influencers is associated with stronger intentions to change appearance among female users (Pan et al., 2022). Similarly, sociocultural attitudes toward appearance have been linked to problematic social networking patterns in young adults, suggesting that internalized appearance standards and online comparison processes are closely intertwined (Perveen, 2024). The present results extend these findings by indicating that appearance comparison may be more informative for predicting body dissatisfaction than general social media exposure itself.

The nonlinear pattern observed for general appearance comparison is also noteworthy. Predicted body dissatisfaction remained relatively stable at lower levels of comparison but increased more sharply once comparison

reached moderate and high levels. This pattern implies that appearance comparison may not operate in a strictly proportional manner. Occasional comparison may be relatively benign, whereas frequent and habitual comparison may increasingly amplify perceived deficiencies and discrepancies between one's own body and socially valued ideals. This interpretation is compatible with evidence that highly visual social media environments can intensify internalization of idealized standards and negative self-evaluation (Blackburn & Hogg, 2024). Research on fitspiration similarly indicates that content framed around fitness and health can nevertheless promote appearance pressure when users repeatedly compare themselves with idealized bodies (Xu, 2024). Thus, the threshold-like increase detected in the current model may reflect a point at which comparison changes from an occasional evaluative process into a more pervasive self-monitoring pattern.

Satisfaction with body shape was the second most important predictor and demonstrated a strong inverse association with predicted body dissatisfaction. This finding was expected conceptually, but its high predictive importance reinforces the distinction between objective body characteristics and subjective body evaluation. Participants who were more satisfied with their current body shape showed substantially lower predicted dissatisfaction, with the greatest reduction occurring as satisfaction moved from low to moderate levels. This result is consistent with studies showing that body image is shaped primarily by subjective interpretation rather than physical measurements alone. Research among young women has linked social media exposure with body image perception and self-esteem, highlighting the importance of personal appraisal of one's body (Goyal & G., 2024). Evidence from young social media users also demonstrates close relationships among body esteem, self-esteem, and broader psychosocial well-being (Pop et al., 2022). The present findings therefore indicate that subjective satisfaction with body shape may act as a central psychological filter through which social and digital appearance standards are interpreted.

Appearance-contingent self-evaluation was the third strongest predictor. Women whose personal worth was more dependent on perceived physical attractiveness were predicted to report substantially higher body dissatisfaction. This result supports the view that appearance becomes especially psychologically consequential when it serves as a major basis for self-worth. Under such conditions, an unfavorable comparison or perceived appearance flaw is unlikely to remain limited to dissatisfaction with one

physical attribute; instead, it may generalize to broader negative self-evaluation. The current finding is consistent with research linking social media use to self-concept and identity-related processes among young adults (Rafiq & Linden, 2024). It also aligns with recent evidence that self-concept clarity moderates the association between social networking site use and appearance anxiety among young women (Hu et al., 2026). Individuals whose self-concept is less stable or whose self-worth is heavily tied to appearance may be more responsive to social feedback and more vulnerable to idealized appearance standards.

The importance of self-evaluation is further supported by the finding that global self-esteem was among the leading predictors. Higher self-esteem was generally associated with lower predicted body dissatisfaction, suggesting that a more positive global evaluation of the self may buffer the effects of appearance-related pressures. Previous work has similarly demonstrated associations among self-esteem, body esteem, loneliness, and social media use (Pop et al., 2022). Studies specifically focused on young women have also identified relationships between social media use, body image perception, and self-esteem (Goyal & G., 2024). Furthermore, self-compassion has been identified as a potentially protective factor against adverse consequences of social media use (Manjanatha et al., 2025). Together, these findings suggest that young women who possess stronger internal sources of self-worth may be less likely to interpret appearance-related discrepancies as evidence of broader personal inadequacy.

Social media appearance comparison ranked fourth in predictive importance and showed a strong positive nonlinear relationship with body dissatisfaction. This result is particularly important because it distinguishes general appearance comparison from comparison occurring specifically within social media environments. Social media comparison may involve unusually idealized targets, including influencers, celebrities, fitness personalities, edited images, and carefully selected peer content. Studies examining TikTok have shown that appearance-focused content can intensify dissatisfaction and the internalization of societal beauty standards (Blackburn & Hogg, 2024). Research has also linked TikTok use with body image processes and greater acceptance of cosmetic surgery, suggesting that online appearance comparison may influence both dissatisfaction and attitudes toward physical modification (Dajches et al., 2025). The findings of the present study are therefore consistent with the proposition that social media does not merely expose users to beauty

ideals but creates a structured environment in which users repeatedly position themselves relative to those ideals.

The finding concerning current–ideal appearance discrepancy further strengthens this interpretation. Participants who perceived a larger gap between their current appearance and their desired appearance were predicted to experience greater body dissatisfaction. Such discrepancies are likely intensified when social media repeatedly presents narrow and highly polished representations of attractiveness. Research on appearance anxiety has highlighted the influence of celebrities and socially valued appearance standards on young people's body-related concerns (Xia, 2024). Similarly, research among young adults in Pakistan and reviews from Arab populations have shown that social media-based appearance ideals can contribute to dissatisfaction across diverse cultural contexts (Fatima, 2025; Naji et al., 2025). The current findings from Armenia add to this cross-cultural evidence by suggesting that perceived distance from an idealized appearance is a central predictor of dissatisfaction even within a sociocultural context that has received relatively little research attention.

Appearance-focused content exposure was also an important predictor, although its contribution was smaller than that of comparison and self-evaluation variables. This difference is theoretically meaningful. Exposure alone does not necessarily lead to dissatisfaction; rather, its impact may depend on how content is interpreted and whether it triggers comparison, internalization, or self-criticism. This interpretation is consistent with evidence that social media effects differ according to platform characteristics and type of engagement (Wang et al., 2023). Research on healthy eating and fitspiration content has likewise shown that even ostensibly health-promoting material can generate body image concerns when it emphasizes restrictive appearance ideals or highly idealized physiques (Xu, 2024; Zaharia & Gonța, 2024). Therefore, appearance-focused exposure may function as an antecedent condition whose effects become stronger when combined with vulnerable self-evaluation and comparison tendencies.

The weaker importance of daily social media use compared with appearance-specific processes is also consistent with recent literature. Although time spent on social media has been associated with body image concerns, duration is an imprecise indicator because the same amount of time can involve substantially different activities (Malhotra et al., 2025). One user may spend several hours communicating with friends or consuming non-appearance-

related content, whereas another may spend the same amount of time viewing dieting, fitness, cosmetic, or beauty-related material. Reviews of social media and mental health similarly emphasize that psychological outcomes depend on the nature of engagement rather than exposure duration alone (Awopetu et al., 2024; Koh et al., 2024). The present findings therefore support a shift from quantity-based measures of social media use toward process-based measures such as comparison, content type, feedback seeking, and appearance-based self-presentation.

Body mass index was a meaningful but comparatively weaker predictor than subjective appearance-related variables. This finding indicates that actual body size contributes to body dissatisfaction but does not determine it. Two women with similar body mass indices may experience markedly different levels of dissatisfaction depending on their body-shape satisfaction, comparison tendencies, internalized ideals, and self-esteem. This pattern supports the broader literature emphasizing that contemporary body image is socially and psychologically constructed rather than reducible to physical measurements. Social media may intensify this subjective component by exposing users to idealized standards that are often unrealistic or digitally altered (Siddegowda et al., 2022). Accordingly, interventions based exclusively on weight or body size may fail to address the primary cognitive and evaluative mechanisms driving dissatisfaction.

Photograph editing and filtering frequency and the importance attributed to likes and comments made smaller but still detectable contributions to prediction. These behaviors may represent forms of appearance management and external validation seeking. Editing photographs can indicate dissatisfaction with one's unmodified appearance or an attempt to conform more closely to perceived social standards. Similarly, placing substantial importance on likes and comments may make self-evaluation more dependent on external approval. Negative feedback or insufficient positive feedback may consequently be experienced as an appearance-related rejection. Research on negative evaluations on social media has shown that unfavorable feedback can adversely affect women's mental health and self-perception (Xiao-long, 2023), while systematic review evidence regarding online body shaming demonstrates the potential psychological consequences of public appearance-based criticism (Kudlová et al., 2024). These findings help explain why online feedback and self-presentation behaviors retained predictive value in the model, even though their

contribution was smaller than broader comparison and self-worth constructs.

The present findings also have implications for understanding the association between body dissatisfaction and eating-related risk. Body dissatisfaction is widely recognized as a potential precursor to unhealthy eating behaviors and eating pathology, and the digital environment may intensify this pathway by normalizing restrictive dieting, thinness ideals, and appearance-focused health messages. Research has linked social media use with eating disorders and disordered eating among young people (Dane & Bhatia, 2023; Gao, 2023), and problematic internet use has also been associated with eating disorder symptoms (Ruiz-Centeno et al., 2025). Recent analyses of TikTok and Instagram indicate that these platforms can simultaneously expose users to harmful content and provide opportunities for prevention, psychoeducation, and healthy behavior promotion (Kruger et al., 2026; Orsolini et al., 2026). The current study therefore suggests that screening for body dissatisfaction may benefit from considering specific digital and self-evaluative indicators rather than relying solely on eating behaviors or weight-related measures.

5. Conclusion

The results highlight the broader mental health relevance of body dissatisfaction. Appearance concerns do not occur in isolation but can intersect with anxiety, low self-esteem, loneliness, and reduced emotional well-being. Evidence regarding screen exposure and adolescent mental health has prompted increasing concern about the psychological effects of contemporary digital environments (Álvarez-Mon et al., 2024). Similarly, social media-related body image concerns have been documented across different cultural and geographic contexts, including Malawi and other non-Western settings (Hajat, 2024). The consistency of such findings across diverse contexts suggests that digital appearance pressures may have become a transnational phenomenon, even though specific beauty ideals and social norms differ between societies. In this regard, the present study contributes evidence from Armenia and indicates that the interaction between social media, appearance comparison, and self-evaluation is highly relevant to body dissatisfaction among young women in this context.

6. Limitations and Suggestions

Several limitations should be considered when interpreting the present findings. First, the cross-sectional

design does not permit causal conclusions, and the identified predictors should be interpreted as variables that improve prediction rather than factors proven to cause body dissatisfaction. Second, all principal variables were based on self-report, which may introduce recall bias, social desirability bias, and shared-method variance. Self-reported height and weight may also be less precise than objectively measured anthropometric data. Third, convenience and online recruitment may have produced a sample with greater digital engagement than the general population of young Armenian women, thereby limiting generalizability. Fourth, although the Random Forest model performed well in the held-out test sample, the model was developed and tested within a single national dataset and was not externally validated in an independent sample. Fifth, some potentially relevant predictors, including depressive symptoms, anxiety, perfectionism, eating disorder symptoms, socioeconomic status, family attitudes toward appearance, and direct measures of beauty-ideal internalization, were not incorporated. Finally, feature importance in a Random Forest model indicates predictive contribution but does not establish the direction, causal mechanism, or independent effect of each predictor, particularly when variables are correlated.

Future studies should employ longitudinal designs to determine how social media behavior, appearance comparison, self-esteem, and body dissatisfaction influence one another over time. Prospective studies could clarify whether increases in appearance-focused social media engagement precede increases in dissatisfaction or whether women with pre-existing body concerns selectively seek more appearance-related content. Future research should also externally validate the present Random Forest model in independent Armenian samples and in culturally distinct populations to determine its transportability. Including objective digital-use data, such as screen-time logs or platform activity records, would reduce reliance on self-report and make it possible to distinguish between active and passive use more precisely. Additional predictive features should include anxiety, depression, perfectionism, self-compassion, internalization of appearance ideals, disordered eating, family and peer pressures, and socioeconomic characteristics. Future studies may also compare Random Forest with other machine-learning algorithms such as gradient boosting, support vector regression, elastic-net regression, and neural networks. Greater use of explainable artificial intelligence methods, including SHAP values and individual-level prediction profiles, could further clarify

how combinations of risk and protective features contribute to body dissatisfaction for different women.

The findings suggest that prevention and intervention programs should focus less on reducing social media use in a general sense and more on modifying the psychological processes that make appearance-related digital content harmful. Programs for young women could include training in recognizing idealized and edited content, reducing habitual appearance comparison, challenging unrealistic beauty standards, strengthening global self-worth, and decreasing dependence on appearance-based validation. Universities, counseling centers, and community health services could incorporate brief screening for appearance comparison, body-shape dissatisfaction, appearance-contingent self-worth, and problematic social media comparison when identifying women at elevated risk for body image difficulties. Digital literacy programs should also teach users how recommendation algorithms can repeatedly expose them to appearance-focused content and how to actively curate healthier online environments. Practitioners working with young women experiencing body dissatisfaction may benefit from assessing social media behavior as part of routine psychological evaluation rather than treating it as a peripheral lifestyle factor. Finally, predictive models such as the one developed in this study could eventually support early risk identification, provided that they are externally validated, used transparently, and implemented as supportive tools rather than as substitutes for professional clinical judgment.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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