



Assessment of body-esteem and attitudes toward various weight loss support methods among young adult women and men

Badanie poziomu samooceny ciała oraz stosunku do różnych metod wspomaganie redukcji masy ciała u młodych kobiet i mężczyzn

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ABSTRACT

INTRODUCTION: Excess body weight, which affects nearly 60% of the adult Polish population, remains a growing public health and social concern by increasing the risk of chronic diseases and negatively impacting mental health. Women are more likely than men to experience societal pressure related to body image and weight. While weight reduction primarily comes from dietary changes and increased physical activity, modern medicine also offers various pharmacological and non-pharmacological approaches. This study aimed to assess body image and weight self-evaluation among young adults aged 18–35, identify their weight-related goals, and examine their attitudes toward selected weight loss support methods, with a consideration of the influencing factors.

MATERIAL AND METHODS: A total of 406 individuals completed an anonymous online questionnaire. The Polish adaptation of the BESAA scale was used to assess body-esteem across three subscales. A 5-point Likert scale measured the respondents' self-evaluation and attitudes toward dietary supplements, GLP-1 analogs, and bariatric surgery. Statistical analysis was conducted using Statistica 13.3.

RESULTS: The median BMI was 22.1 for women and 25.2 for men. Overall, 76.4% had attempted weight loss in the past. Women more often reported such attempts (81.2% vs. 63.7%) and expressed a desire to lose weight (61.7% vs. 46.9%). Participants with normal BMI reported significantly higher weight satisfaction. While bariatric surgery received the highest scores for effectiveness and safety among the listed methods, overall ratings for all approaches were quite low.

CONCLUSIONS: The findings underscore the need for education that promotes body acceptance, realistic body ideals, and informed use of weight loss methods.

KEYWORDS

weight loss, body self-esteem, obesity, bariatric surgery, dietary supplements, GLP-1 analogs, self-acceptance

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STRESZCZENIE

WSTĘP: Nadmierna masa ciała, występująca u niemal 60% dorosłych Polaków, pozostaje rosnącym problemem zdrowotnym i społecznym, zwiększając ryzyko chorób przewlekłych oraz negatywnie wpływając na zdrowie psychiczne. Kobiety częściej niż mężczyźni odczuwają presję społeczną związaną z wyglądem i wagą. Mimo iż podstawowa strategia redukcji masy ciała obejmuje modyfikację diety i aktywność fizyczną, współczesna medycyna oferuje także różne metody farmakologiczne i zabiegowe. Celem badania była ocena obrazu ciała i samooceny masy ciała u młodych dorosłych w wieku 18–35 lat, identyfikacja ich celów związanych z masą ciała oraz analiza postaw wobec wybranych metod wspomagających redukcję masy ciała.

MATERIAŁ I METODY: Anonimowy kwestionariusz online wypełniło łącznie 406 osób. Do pomiaru samooceny ciała w trzech podskalach zastosowano polską wersję skali BESAA. 5-stopniowa skala Likerta służyła do pomiaru samooceny oraz postaw respondentów wobec suplementów diety, analogów GLP-1 i chirurgii bariatrycznej. Analizę statystyczną przeprowadzono z wykorzystaniem programu Statistica 13.3.

WYNIKI: Mediana BMI wyniosła 22,1 u kobiet i 25,2 u mężczyzn. Spośród respondentów 76,4% podejmowało w przeszłości próby redukcji masy ciała. Kobiety częściej zgłaszały takie próby (81,2% vs. 63,7%) oraz wyrażały chęć utraty wagi (61,7% vs. 46,9%). Uczestnicy z prawidłowym wskaźnikiem BMI wykazywali istotnie wyższy poziom zadowolenia z własnej wagi. Choć chirurgia bariatryczna uzyskała najwyższe oceny skuteczności i bezpieczeństwa spośród wymienionych metod, ogólne oceny wszystkich podejść były dość niskie.

WNIOSKI: Wyniki badania podkreślają potrzebę edukacji promującej akceptację własnego ciała, realistyczne wyobrażenia o swoim ciele oraz świadome stosowanie metod odchudzania.

SŁOWA KLUCZOWE

redukcja masy ciała, samoocena ciała, otyłość, chirurgia bariatryczna, suplementy diety, analogi GLP-1, samoakceptacja

INTRODUCTION

Excess body weight is an increasingly prevalent health and social issue. It is estimated that approximately 60% of adult Poles struggle with excess body weight, with nearly 40% classified as overweight and 21% as obese [1]. Obesity is a chronic, multifactorial disease that poses a significant challenge to modern medicine. It is defined as an excessive accumulation of adipose tissue that can adversely affect health and quality of life. According to the World Health Organization (WHO), overweight is diagnosed when the body mass index (BMI) is at least 25, while obesity is defined as a BMI equal to or exceeding 30 [2,3].

Obesity is a major risk factor for the development of numerous chronic diseases, including lipid metabolism disorders, hypertension, type 2 diabetes, atherosclerosis, osteoarthritis, and non-alcoholic fatty liver disease [4]. The impact of excess body weight on mental health and body image perception should not be underestimated. Individuals with obesity are often perceived as less valuable, unattractive, and neglectful, contributing to increased feelings of social exclusion [5]. Women are more likely than men to assess their appearance critically, struggle with body dissatisfaction, and experience low self-esteem, particularly those with body weights above or below the average [6,7]. There is also a notable correlation between body image satisfaction and overall self-esteem: greater dissatisfaction and frustration with appearance are associated with lower self-worth [7,8]. The primary strategy for weight reduction is lifestyle modification, including dietary changes to achieve a negative energy balance and increased physical

activity [9]. In advanced obesity or cases where diet and exercise prove ineffective, additional pharmacological or surgical interventions may be necessary. Numerous dietary supplements are available on the market, claiming to aid weight loss. However, a meta-analysis of the effectiveness of dietary supplements and alternative therapies in weight reduction indicates a lack of strong, high-quality evidence supporting the efficacy of such products and even suggests potentially dangerous side effects [10,11].

Pharmacotherapy for obesity is gaining interest, particularly with modern medications like semaglutide and tirzepatide. These drugs are agonists of the glucagon-like peptide 1 (GLP-1) receptor, influencing appetite regulation and glucose metabolism and thereby contributing to weight loss. Studies have demonstrated the effectiveness of these medications in treating excess body weight and type 2 diabetes, a common complication of obesity. They are recommended for individuals with obesity (BMI ≥ 30) or overweight (BMI ≥ 27) with at least one weight-related comorbidity. However, it is important to note that these are relatively new treatments, and their potential long-term adverse effects have not yet been fully identified and described [12,13].

Bariatric surgery represents a surgical approach to supporting weight reduction. It is currently the most effective method for treating obesity, especially severe obesity (BMI ≥ 40) with metabolic complications [14]. Bariatric procedures, indicated for individuals with a BMI of ≥ 40 or ≥ 35 and comorbidities when conservative treatment has failed, enable significant, sustained weight loss and improved metabolic parameters. Opinions on bariatric surgery are divided: some view it as effective and life-enhancing, while



others express concerns regarding its safety, associated risks, and social stigma [15,16]. Because effective weight reduction requires a negative caloric balance, implementing a personalized diet and physical activity plan is crucial for individuals with obesity, ideally following dietary consultation and, if indicated, supported by additional methods.

The aim of this study was to assess the body image and weight self-evaluation among young women and men (aged 18–35) and to identify their declared weight-related goals. The study also analyzed participants' attitudes toward selected weight loss support methods – dietary supplements, GLP-1 analogs, and bariatric surgery – in terms of their perceived effectiveness and safety. Additionally, the research aimed to determine the influence of BMI on the perception of these methods, examine differences in self-evaluation based on gender and BMI, and assess the relationship between weight-related goals and opinions on the effectiveness and safety of the selected strategies.

MATERIAL AND METHODS

The study was based on 406 completed questionnaires collected between March and April 2025. The use of computer-assisted web interviews (CAWI) enabled data collection through social media platforms. The inclusion criterion was an age between 18 and 35 years. Participation in the study was anonymous and voluntary. The sample was selected from incidental (self-selected) volunteers and therefore cannot be considered representative. The questionnaire consisted of three sections, the first of which included anthropometric and demographic data. The second section addressed the self-perception of body image across three domains and the assessment of current and past weight-related goals. To evaluate body image, the Polish adaptation of the Body-Esteem Scale for Adolescents and Adults (BESAA) was used, whose high reliability was confirmed by Słowińska [17] (Cronbach's $\alpha > 0.75$ for all subscales). The appearance subscale included 10 items, the weight subscale 8 items, and the attribution subscale 5 items. The third section focused on the participants' attitudes toward selected weight reduction methods, including dietary supplements, GLP-1 analogs, and bariatric surgery. The participants rated their overall attitudes as well as the perceived effectiveness and

safety of these methods. A 5-point Likert scale was applied to assess both body esteem and attitudes toward various weight management strategies. The data was subjected to statistical analysis, including the calculation of descriptive statistics. Inferential analysis was conducted using the Mann–Whitney U test, Kruskal–Wallis test, and chi-square (χ^2) test. A p-value of < 0.05 was considered statistically significant. All analysis was performed using Statistica 13.3. According to the opinion of the Bioethics Committee (No. BNW/NWN/0052/KB/85/25), the study did not require ethical approval.

RESULTS

A total of 409 responses were collected. Due to incomplete questionnaires, data from 406 participants (293 women and 113 men) were included in the final analysis. The vast majority of respondents ($n = 257$) were aged between 21 and 25 years. The study sample was predominantly composed of residents of large cities with populations exceeding 100,000. More than half of the participants ($n = 246$) were primarily engaged in intellectual work.

The median height among women was 167 cm, the median body weight was 63 kg, and the median BMI 22.1. In men, the corresponding values were 180 cm, 83 kg, and 25.2 (Table I). Based on BMI, the participants were categorized according to their body weight. Most respondents had a normal body weight (65.3%), followed by overweight individuals (22.9%). Based on self-reported height and weight, 7.1% were classified as obese and 4.7% as underweight. A statistically significant difference in BMI category between women and men was observed ($p < 0.001$). Normal body weight was recorded in 72% of women compared to 47.8% of men. Additionally, 17.1% of women were categorized as overweight, whereas this proportion reached 38.1% among men. Class III obesity was identified in three male participants and in none of the female respondents (Table II).

When asked for a subjective assessment of whether they eat healthily every day, over half of the participants (55.2%) answered “rather yes,” with no statistically significant difference between women and men ($p = 0.164$). Overall, 76.4% of the respondents had attempted to lose weight in the past, with women doing so significantly more often than men (81.2% vs. 63.7%, $p = 0.0002$; Table III, Figure 1).


Table I. Characteristics of the study group

Data	Total	Women	Men
Sample size [N (%)]	406 (100%)	293 (72.2%)	113 (27.83%)
Age [N (%)]			
18–20	40 (9.9%)	33 (11.3%)	7 (6.2%)
21–25	257 (63.3%)	195 (66.6%)	62 (54.9%)
26–30	59 (14.5%)	33 (11.3%)	26 (23.0%)
31–35	50 (12.3%)	32 (10.9%)	18 (15.9%)
Place of residence [N (%)]			
Rural area	85 (20.9%)	59 (20.1%)	26 (23.0%)
Town with < 20,000 inhabitants	31 (7.6%)	19 (6.5%)	12 (10.6%)
Town with 20,000–100,000 inhabitants	87 (21.4%)	60 (20.5%)	27 (23.9%)
City with > 100,000 inhabitants	203 (50.0%)	155 (52.9%)	48 (42.5%)
Type of work performed [N (%)]			
Mainly physical work	36 (8.9%)	22 (7.5%)	14 (12.4%)
Mainly mental work	246 (60.6%)	179 (61.1%)	32 (28.3%)
A combination of physical and mental work	124 (30.5%)	92 (31.4%)	67 (59.3%)
Anthropometric parameters			
Height [cm]	170.8	167.0	180.0
Body weight [kg]	67.0	63.0	83.0
BMI	23.0	22.1	25.2

BMI – body mass index.

Table II. Body mass index categories in the total sample and by gender [N (%)]

Category	Total	Women	Men
Underweight	19 (4.7%)	18 (6.1%)	1 (0.9%)
Normal weight	265 (65.3%)	211 (72.0%)	54 (48%)
Overweight	93 (22.9%)	50 (17.1%)	43 (38.0%)
Class I obesity	17 (3.2%)	9 (3.1%)	8 (7.1%)
Class II obesity	9 (2.2%)	5 (1.7%)	4 (3.5%)
Class III obesity	3 (0.7%)	0 (0.0%)	3 (2.7%)

Table III. Comparison of self-perceived eating habits and body weight goals, in the study group and by gender [N (%)]

Respondents' self-evaluation	Total	Women	Men	p-value
Do you consider your diet to be healthy?				
Definitely yes	40 (9.9%)	26 (8.9%)	14 (12.4%)	p = 0.164
Rather yes	224 (55.2%)	166 (56.7%)	58 (51.3%)	
Rather no	88 (21.7%)	67 (22.9%)	21 (18.6%)	
Definitely not	11 (2.7%)	5 (1.7%)	6 (5.3%)	
I have no opinion	43 (10.6%)	29 (9.9%)	14 (12.4%)	
Have you ever consciously tried to reduce your body weight in the past?				
Yes	310 (76.4%)	238 (81.2%)	72 (63.7%)	p = 0.0002
No	96 (23.6%)	55 (18.8%)	41 (36.3%)	
Currently, I would like to:				
Lose weight	233 (57.4%)	180 (61.4%)	53 (46.9%)	p = 0.016
Maintain my current weight	105 (25.9%)	73 (24.9%)	32 (28.3%)	
Gain weight	32 (7.9%)	17 (5.8%)	15 (13.3%)	
I haven't thought about it	36 (8.9%)	23 (7.8%)	13 (11.5%)	

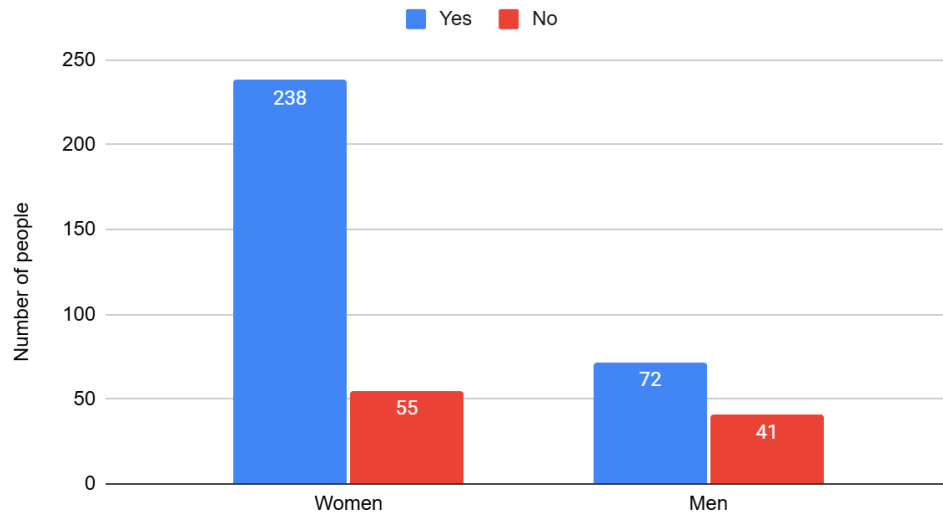


Fig. 1. Conscious attempts to reduce body weight in the past, by gender

The most frequently chosen weight reduction methods among the participants were as follows (in descending order): modification of dietary habits and/or increased physical activity, dietary supplements, consultation with a physician and/or dietitian, and GLP-1 analogs. One participant reported undergoing bariatric surgery as a method of weight reduction. Most respondents considered their past weight loss attempts effective, with no significant gender differences ($p = 0.243$; Table IV).

Regarding current weight-related goals, a general preference for weight loss was noted. This trend was observed both in the overall analysis and after stratifying the sample by gender. Statistical analysis revealed a significant association between gender and current body weight goals ($p = 0.016$). The women were more likely than the men to express a desire to lose weight, whereas the men more frequently reported either no concern about their weight or a desire to increase it (Table III, Figure 2).

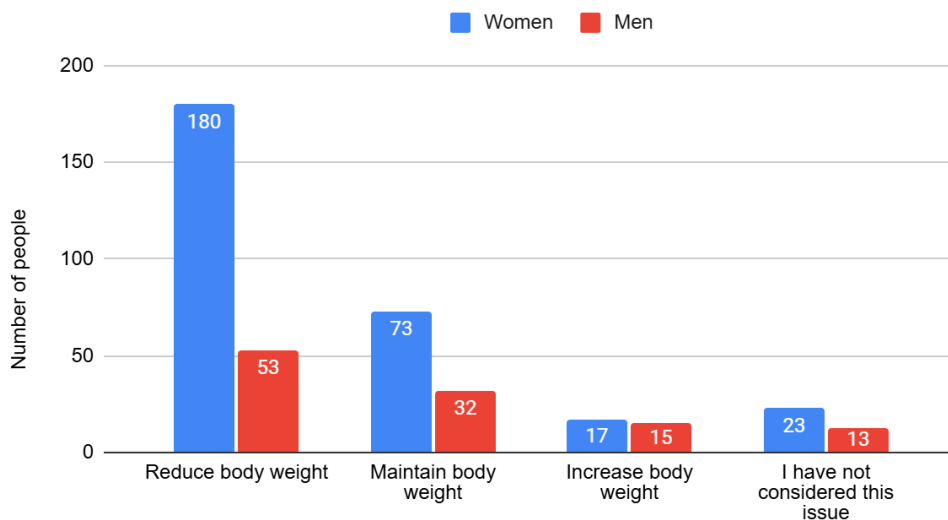


Fig. 2. Current body weight objectives by gender

When asked about the weight reduction methods they would be willing to use in the future, the participants most frequently indicated the following (in descending order): dietary habit modification and/or increased physical activity, consultation with a physician and/or dietitian, GLP-1 analogs, dietary supplements, and bariatric surgery.

In the part of the study aimed at assessing body self-esteem, the Polish adaptation of the BESAA scale was utilized. Median self-esteem scores were calculated across three dimensions: appearance self-esteem, weight self-esteem, and attributed evaluation. Each dimension included specific statements rated by the respondents using a 5-point Likert scale. The median



score for appearance self-esteem among women was 27.0, for weight self-esteem it was 20.0, and for attributed evaluation 16.0. Among the men, the respective medians were 26.0, 19.0, and 16.0. Statistical analysis did not reveal significant differences between women and men in terms of appearance self-esteem ($p = 0.080$) or attributed evaluation ($p = 0.720$). However, a statistically significant difference was found in weight self-esteem ($p = 0.002$), with the women rating their satisfaction with their body weight significantly higher on average (Table V).

The relationship between BMI and self-esteem was also analyzed. No significant differences in appearance self-esteem were observed between the subgroups classified by BMI category. However, statistically significant differences were found for both attributed evaluation ($p < 0.0001$) and weight self-esteem ($p < 0.0001$). Post hoc analysis for weight self-esteem revealed significant differences between participants with normal weight and those who were overweight ($p < 0.0001$), as well as between the normal weight group and the participants with obesity class I ($p = 0.021$). Individuals with normal body weight reported significantly higher levels of satisfaction with their weight than those with excessive body weight (Figure 3). The post hoc analysis regarding attributed evaluation showed significant differences between the following groups: underweight vs. obesity class II ($p = 0.016$), normal weight vs. overweight ($p = 0.002$), obesity class II vs. normal weight ($p < 0.0001$), and obesity class II vs. overweight ($p = 0.028$; Table VI).

The final section of the questionnaire examined the participants' assessment and comparison of attitudes toward three weight loss support methods, using

a 5-point Likert scale: dietary supplements, prescription medications (GLP-1 analogs), and bariatric surgery. No significant differences were observed between the sexes regarding general attitudes toward supplements ($p = 0.532$); however, the men rated their safety significantly higher than the women (3.00 vs. 2.00; $p = 0.021$). Bariatric surgery received the highest ratings, with a median safety score of 3.00 and an effectiveness score of 4.00. Overall attitudes toward this method were significantly more favorable among the women ($p = 0.009$; Table VII, Figure 4).

Further analysis examined the respondents' past weight loss experiences and their evaluations of each method (Table VIII). For dietary supplements, no statistically significant differences were found in general attitude ($p = 0.768$), perceived effectiveness ($p = 0.180$), or safety ($p = 0.326$), though individuals with no prior attempts to lose weight tended to rate the effectiveness and safety of supplements slightly higher than those who had previously attempted weight loss.

Additionally, the respondents' current weight-related goals were compared with their perceptions of each weight loss method (Table IX). In the case of supplements, significant differences in general attitude were observed between the subgroups ($p = 0.034$).

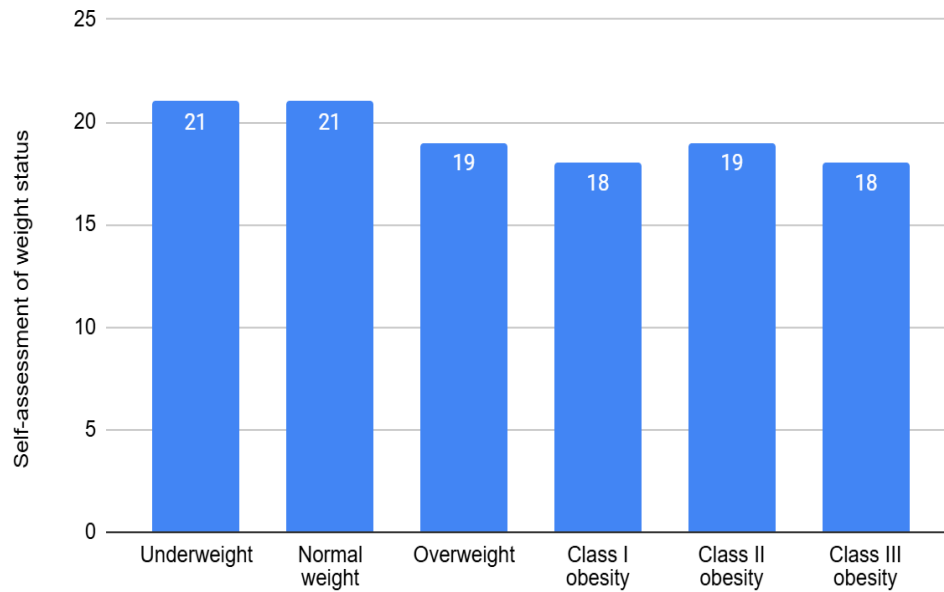
Table X, which included only participants currently intending to lose weight, revealed no statistically significant gender differences (all p -values > 0.200), suggesting more uniform perceptions of the weight loss methods between sexes. Similarly, no significant differences were observed across BMI categories; the median test results ($p > 0.05$) indicated a comparable distribution of responses regardless of weight classification.

Table V. Median scores of the Body-Esteem Scale for Adolescents and Adults (BESAA) subscales, in the study group and by gender

BESAA subscales	Total	Women	Men	p-value
Appearance self-esteem	26.0 $\pm$ 3.028	27.0 $\pm$ 2.983	26.0 $\pm$ 3.116	$p = 0.080$
Weight self-esteem	20.0 $\pm$ 3.295	20.0 $\pm$ 3.153	19.0 $\pm$ 3.509	$p = 0.002$
Attributed evaluation	16.0 $\pm$ 4.429	16.0 $\pm$ 4.513	16.0 $\pm$ 4.223	$p = 0.720$

Table VI. Median scores of the Body-Esteem Scale for Adolescents and Adults (BESAA) subscales, by BMI category

BESAA subscales	Underweight	Normal weight	Overweight	Obesity class I	Obesity class II	Obesity class III	p-value
Appearance self-esteem	28.0 $\pm$ 2.590	26.0 $\pm$ 2.982	26.0 $\pm$ 3.042	25.0 $\pm$ 4.079	25.0 $\pm$ 2.455	25.0 $\pm$ 1.528	$p = 0.0764$
Weight self-esteem	21.0 $\pm$ 3.931	21.0 $\pm$ 3.114	19.0 $\pm$ 3.411	18.0 $\pm$ 2.176	19.0 $\pm$ 2.062	18.0 $\pm$ 3.512	$p < 0.0001$
Attributed evaluation	16.0 $\pm$ 4.067	17.0 $\pm$ 4.237	15.0 $\pm$ 4.102	15.0 $\pm$ 3.860	5.0 $\pm$ 3.969	9.0 $\pm$ 5.859	$p < 0.0001$

**Fig. 3.** Self-assessment of weight status, by body mass index category**Table VII.** Median ratings of respondents' attitudes toward weight loss support methods

Weight loss support method	Total	Women	Men	p-value
Supplements				
Overall attitude	2.00 ± 1.108	2.00 ± 1.084	2.00 ± 1.170	p = 0.532
Effectiveness	2.00 ± 1.098	2.00 ± 1.093	2.00 ± 1.106	p = 0.075
Safety	2.00 ± 1.123	2.00 ± 1.085	3.00 ± 1.191	p = 0.021
Prescription medications				
Overall attitude	3.00 ± 1.167	3.00 ± 1.166	2.00 ± 1.173	p = 0.956
Effectiveness	3.00 ± 1.266	3.00 ± 1.281	3.00 ± 1.230	p = 0.843
Safety	2.00 ± 1.150	2.00 ± 1.169	3.00 ± 1.094	p = 0.187
Bariatric surgery				
Overall attitude	3.00 ± 1.163	3.00 ± 1.145	3.00 ± 1.175	p = 0.009
Effectiveness	4.00 ± 1.133	4.00 ± 1.138	3.00 ± 1.114	p = 0.169
Safety	3.00 ± 1.078	3.00 ± 1.089	3.00 ± 1.045	p = 0.251

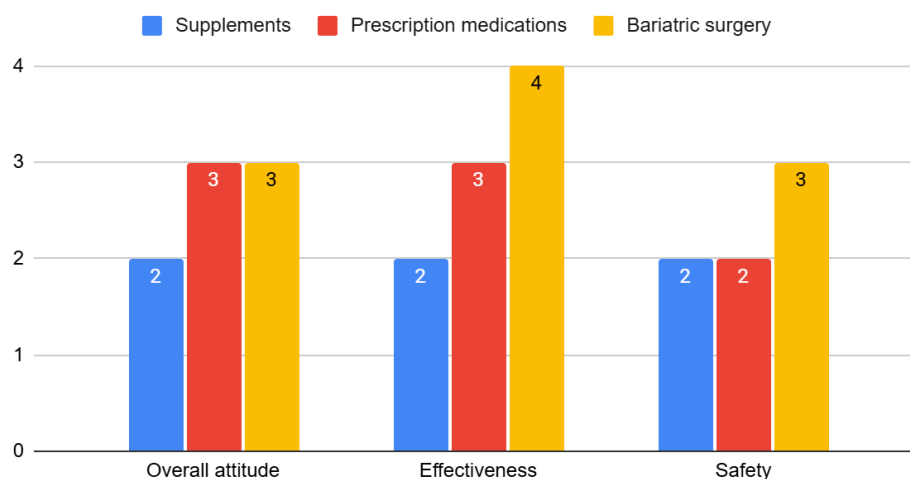
**Fig. 4.** Median ratings of respondents' attitudes toward weight loss support methods


Table VIII. Median ratings of attitudes toward weight loss methods, among individuals with and without previous weight loss attempts

Have you ever intentionally tried to lose weight in the past?			
Weight loss support method	Yes	No	p-value
Supplements			
Overall attitude	2.00 ± 1.111	2.00 ± 1.103	p = 0.768
Effectiveness	2.00 ± 1.084	2.00 ± 1.138	p = 0.180
Safety	2.00 ± 1.099	2.00 ± 1.195	p = 0.326
Prescription medications			
Overall attitude	3.00 ± 1.165	2.00 ± 1.179	p = 0.816
Effectiveness	3.00 ± 1.277	3.00 ± 1.223	p = 0.183
Safety	2.00 ± 1.163	2.00 ± 1.110	p = 0.785
Bariatric surgery			
Overall attitude	3.00 ± 1.172	3.00 ± 1.126	p = 0.273
Effectiveness	4.00 ± 1.157	3.00 ± 1.053	p = 0.355
Safety	3.00 ± 1.069	3.00 ± 1.111	p = 0.586

Table IX. Median ratings toward weight loss methods based on respondents' current body weight goals

Currently, I would like to:					
Weight loss support method	Lose weight	Gain weight	Maintain my current weight	I haven't thought about it	p-value
Supplements					
Overall attitude	2.00 ± 1.100	2.00 ± 1.435	2.00 ± 0.955	2.00 ± 1.171	p = 0.034
Effectiveness	2.00 ± 1.088	3.00 ± 1.164	2.00 ± 1.051	2.00 ± 1.219	p = 0.654
Safety	2.00 ± 1.106	3.00 ± 1.224	2.00 ± 1.154	3.00 ± 1.055	p = 0.539
Prescription medications					
Overall attitude	3.00 ± 1.195	2.00 ± 1.043	2.00 ± 1.179	2.00 ± 1.009	p = 0.088
Effectiveness	3.00 ± 1.286	3.00 ± 1.120	3.00 ± 1.238	3.00 ± 1.296	p = 0.045
Safety	3.00 ± 1.179	2.00 ± 0.976	2.00 ± 1.150	2.00 ± 1.059	p = 0.099
Bariatric surgery					
Overall attitude	3.00 ± 1.188	3.00 ± 1.085	3.00 ± 1.167	3.00 ± 1.100	p = 0.429
Effectiveness	4.00 ± 1.118	3.00 ± 1.228	3.00 ± 1.108	3.00 ± 1.108	p = 0.065
Safety	3.00 ± 1.102	2.50 ± 1.135	3.00 ± 1.033	3.00 ± 0.986	p = 0.960

Table X. Median ratings toward weight loss methods among individuals with a current goal to lose weight

Currently, I would like to lose weight.			
Weight loss support method	Women	Men	p-value
Supplements			
Overall attitude	2.00 ± 1.091	2.00 ± 1.137	p = 0.396
Effectiveness	2.00 ± 1.068	2.00 ± 1.159	p = 0.442
Safety	2.00 ± 1.071	2.00 ± 1.214	p = 0.321
Prescription medications			
Overall attitude	3.00 ± 1.194	3.00 ± 1.208	p = 0.748
Effectiveness	3.00 ± 1.307	3.00 ± 1.219	p = 0.639
Safety	2.00 ± 1.193	3.00 ± 1.126	p = 0.244
Bariatric surgery			
Overall attitude	3.00 ± 1.175	3.00 ± 1.223	p = 0.213
Effectiveness	4.00 ± 1.136	4.00 ± 1.062	p = 0.605
Safety	3.00 ± 1.116	3.00 ± 1.060	p = 0.835



DISCUSSION

Issues related to body image and weight acceptance among young women and men have been receiving increasing attention in the scientific community. In the context of the rising prevalence of lifestyle diseases such as obesity and depression, studies focusing on mental health and effective strategies for managing excess body weight are gaining importance. Modern culture – largely shaped by social media – promotes extreme beauty standards and body ideals, which may negatively affect self-perception, particularly among young women. At the same time, medicine faces the challenge of developing effective, long-term treatments for obesity, whose growing prevalence constitutes a major threat to public health. In addition to classic approaches based on dietary changes and physical activity, pharmacological and surgical interventions are also available, differing in indications, effectiveness, and public perception [3].

The results of the study provide valuable insight into gender differences in body perception, weight control behaviors, and attitudes toward weight loss methods. Although the average BMI for the overall group was within the normal range, gender-specific differences emerged: women had a normal BMI (median 22.1), while men showed a higher BMI (median 25.2). However, the BMI scale does not differentiate between fat and muscle mass, so excess muscle may account for elevated values in some individuals. Nevertheless, this finding aligns with statistics that indicate a higher prevalence of excessive body weight among men [1]. However, it remains unclear whether these favorable BMI values truly reflect the sample's characteristics or result from biased self-reporting. Even in anonymous surveys, participants may experience social pressure or shame, leading to underreporting of weight [18,19]. Despite having a normal BMI, women more often reported past weight-loss attempts and a current desire to lose weight than men. Conversely, men were less likely to express such intentions, despite having higher BMI. This may reflect persistent societal pressure for thinness among women and greater acceptance of excess weight in men [20,21].

Contrary to previous studies suggesting a higher appearance satisfaction among men, no significant gender differences were observed, possibly reflecting a convergence in body image standards across genders [22]. The BMI-based analysis showed that individuals with normal body weight reported significantly higher weight self-esteem and attributed evaluation scores compared to those with overweight or obesity, highlighting the role of physical parameters in body image. Women also assessed their body weight more positively than men. A meta-analysis suggests that

recent sociocultural shifts promoting body diversity and acceptance among women may be gradually mitigating the pressure to conform to ideals exalting thinness [23]. Additionally, men in this study had a higher median BMI and were more frequently classified as overweight, which may have contributed to lower weight satisfaction.

Despite these differences, overall body self-esteem in the sample was moderate to low. Median BESAA subscale scores were 26/50 (appearance), 20/40 (weight), and 16/25 (attributed evaluation), indicating low satisfaction with body image among young adults. The Polish version of the BESAA scale enabled a detailed assessment of self-esteem dimensions. A 2019 study on young Polish adults by Słowińska [17] using the BESAA revealed statistically significant gender differences. Women scored lower on the “Appearance” and “Weight” subscales than men, indicating greater dissatisfaction with body image and weight. In comparison to the present findings, these results suggest a potential narrowing of gender differences in body satisfaction over time. Moreover, the large sample size and demographic diversity support the reliability of the findings.

A limitation of the study is the reliance on self-reported height and weight, which may affect the accuracy of BMI values. Nevertheless, the results reveal important trends in body image and weight-related goals, emphasizing the need for educational efforts that promote body acceptance, gender equality, realistic health expectations, and the avoidance of unhealthy weight-loss practices.

The study demonstrates that among the three weight loss support methods it analyzed, bariatric surgery received the highest ratings – regardless of gender, prior weight loss attempts, or current weight-related goals. Its perceived effectiveness and safety scores were the highest across all groups. In contrast, dietary supplements and prescription medications were both rated significantly lower, particularly in terms of perceived safety. The favorable assessment of bariatric surgery may reflect a growing awareness of its effectiveness in treating obesity and, simultaneously, an oversimplified perception of the procedure. Despite being an invasive intervention, it was considered relatively safe; however, its frequent selection as the most effective method may indicate limited awareness of the strict dietary and behavioral requirements necessary before and after surgery.

Notably, the similar ratings for supplements and prescription medications may indicate the respondents' inability to differentiate between these categories, possibly perceiving both as general “supportive products” for weight loss, without a clear understanding of their legal status, mechanisms of action, or health risks. The evaluation of bariatric surgery as highly effective and acceptably safe is



supported by previous studies [14,15], whereas the limited trust in supplements aligns with literature highlighting their ambiguous efficacy and limited market regulation [10,11]. The confusion between supplements and medications may also stem from insufficient health education, as previously reported in the contexts of self-treatment and unsupervised pharmacotherapy.

A major strength of the study lies in its multidimensional analysis of attitudes by gender, weight history, and current goals. Limitations include the use of an unverified method, self-reported data, and self-selection bias. The similar ratings of supplements and medications may be explained by the fact that the participants' knowledge was not assessed. Overall, the respondents expressed limited confidence in the effectiveness and safety of the analyzed weight loss methods, while showing greater trust in traditional strategies based on dietary modification, physical activity, and professional consultation.

CONCLUSIONS

1. Despite having significantly lower BMI values, women more often than men reported previous

weight-loss attempts ($p < 0.001$), reflecting strong sociocultural pressure and highlighting the need to promote body acceptance and realistic appearance standards.

2. Participants with normal BMI demonstrated higher levels of weight-related self-esteem. Nevertheless, the overall BESAA scores across the domains of appearance, weight, and social attribution indicate low body satisfaction in this population, suggesting the need for targeted educational programs that foster healthy self-perception.
3. Among the evaluated weight-loss methods, bariatric surgery received the highest ratings for effectiveness and safety; however, overall trust in pharmacological and surgical interventions was limited. The respondents clearly favored traditional strategies such as dietary changes and increased physical activity.
4. Given the observed similarity in how supplements and medications were rated, educational initiatives should address the legal status, mechanisms, and safety profiles of these products. Healthcare professionals should be involved in delivering clear guidance on evidence-based weight-loss methods, including the appropriate use of bariatric surgery.

Authors' contribution

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Data collection – Z. Graca, T. Wołoszczuk, A. Skowronek, J. Kołodziej

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