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Assessing weight bias among Turkish dietitians: determinants and impact on professional practice

Ezgi Bellikci-Koyu^{1*} , Yasemin Karaagac¹  and Şule Demirci¹

Abstract

Background Weight bias, whether explicit or implicit, has a detrimental effect on the physiological and psychological well-being of individuals, thereby complicating obesity management, particularly in healthcare settings. The objective of this study was to examine weight bias among Turkish dietitians. A further aim was to investigate the effect of the patient's weight status on the dietitian's assessment and dietetic practice.

Methods This cross-sectional web-based study analyzed data from 411 Turkish dietitians. The participants completed a series of sociodemographic information, anthropometric measurements, and scales, including the Fat Phobia Scale (FPS) and Attitudes Toward Obese Persons Scale (ATOP). After completing the scales, the dietitians were randomly assigned to a case study on lactose intolerance via an online survey platform. All patient information was identical, except for the patient's weight and photography. The objective of the case study was to evaluate how the body weight of a patient who consulted a dietitian for a reason unrelated to the body weight affected professional practices.

Results A total of 66.9% of dietitians exhibited fat phobia. While men had higher FPS scores than women ($p=0.022$), dietitians with a family history of obesity ($p=0.032$) had lower FPS scores. BMI was negatively associated with FPS scores ($\beta=-0.036$, $p=0.026$). However, dietitians with a history of feeling overweight had higher FPS scores ($p=0.024$). Dietitians' assessments of cases differed according to the patient's body weight status. Although, there were no statistically significant differences in FPS and ATOP scores between dietitians assigned to cases with higher or lower body weight ($p>0.05$ for each), those assessing the case with higher body weight rated patients' nutritional ($p=0.025$) and biochemical status ($p<0.001$) as worse and were more inclined to recommend weight management strategies.

Conclusions The issue of fat phobia and weight bias represents a significant concern among dietitians, with notable impacts on their professional practice. It is therefore of crucial importance to address and resolve these issues within the context of dietetic education.

Trial registration ClinicalTrials.gov registration number: NCT06624111 (submitted 01/10/2024).

Keywords Obesity, Weight bias, Weight stigma, Fat-phobia, Dietetics, Dietitians

Background

Obesity is a global health issue, and its prevalence is increasing worldwide. According to the World Health Organization (WHO), obesity has more than doubled among adults and quadrupled among adolescents since 1990. In 2022, 43% of adults were living with

*Correspondence:

Ezgi Bellikci-Koyu
ezgi.bellikci@ikcu.edu.tr

¹ Department of Nutrition and Dietetics, Faculty of Health Sciences, Izmir Kâtip Çelebi University, Izmir, Türkiye



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overweight and 16% were living with obesity [1]. Even though the precise etiology of obesity remains incompletely understood, it is widely recognized as a multifaceted health issue influenced by a variety of factors, including an obesogenic environment, psychosocial dynamics, biological factors, and genetic predisposition [1–3]. Of particular significance is the recognition that obesity does not simply result from individual behaviors or lifestyle choices; it can also emerge from factors beyond individual control, including biological factors such as parental biological characteristics and genetic mutations that disrupt the regulation of energy balance, appetite, and lipid metabolism [2, 3].

Individuals living with obesity are confronted with a dual challenge, consisting of the health risks associated with high body-mass which is a leading risk factor for both mortality and morbidity [4], compounded by weight bias and stigma due to their weight [5]. Weight bias is a type of prejudice that includes negative beliefs, assumptions and attitudes towards people because of their body weight, leading to stigmatization and discrimination [6]. This bias can be explicit or implicit. Explicit weight bias is characterized by consciously held negative attitudes, and it can be measured by self-report, whereas implicit weight bias consists of negative attributions and stereotypes that are subconscious [5, 6]. Weight stigma represents the manifestation of weight bias through social stereotypes, and it refers to the social devaluation of individuals because of their body weight. When weight bias is internalized, which is referred as “self-stigma” or “weight bias internalization”, individuals begin to blame themselves, accept stereotypes, apply these stereotypes to themselves, and experience self-devaluation [5]. On the other hand, the term fat-phobia is employed to denote the pathological fear of fat, which manifests itself in stereotypes such as lack of self-control, laziness, unattractiveness, shapelessness and discrimination against people with overweight and obesity [7]. Therefore, fat phobia can be regarded as a more overtly expressed, and hazardous form of weight bias.

Weight bias and weight stigma lead to both physiological and psychological problems, complicating the management of obesity. Weight stigma is linked with perceived stress, depression, anxiety, body dissatisfaction, lower self-esteem, social isolation, substance use and reduced quality of life [8–10]. Additionally, it is positively associated with increased cortisol levels, oxidative stress, C-reactive protein levels and diabetes risk [8]. Ironically, weight stigma is also suggested as a potential contributor to obesity by inducing physiological stress and promoting unhealthy lifestyles such as reduced physical activity, disordered eating attitudes, and unhealthy diet [11].

Despite numerous negative consequences associated with weight stigma, it is a pervasive issue for individuals particularly those with obesity. It is reported that weight discrimination affects between 19–42% of adults with obesity, with those having a higher BMI experiencing stigma more frequently [12]. Moreover, in a multinational study involving participants from six countries, the prevalence of weight stigma ranged from 55.6–61.3% among adults enrolled in a weight management program [13]. People with obesity may encounter weight stigma in a variety of settings, including the workplace, educational institutions, media, and even within their family or social circle [14]. Weight stigma is also highly prevalent in healthcare settings [5, 14, 15]. Despite the goal of providing the best treatment to patients, many healthcare professionals hold negative attitudes towards obesity, including stereotypes that patients with obesity are lazy, lack self-control and willpower [5]. Weight bias exhibited by health professionals negatively affects the healthcare process, and internalized weight bias is associated with avoidance of health care services, undergoing routine checkups less frequently and perceiving the quality of the health care received as lower [16]. A systematic review has reported that various health care providers, including physicians, nurses, dietitians, psychologists, physiotherapists, occupational therapists and exercise physiologists demonstrate implicit and/or explicit weight bias towards individuals with overweight or obesity [15].

Dietitians are a group of health professionals who work extensively with individuals living with overweight or obesity. A recent study suggested that certain characteristics of dietitians may influence their approaches to patients and clinical practices [17]. The study revealed that approaches to dietetic practice varied according to the personal characteristics of dietitians and dietetics students, including body dissatisfaction, body avoidance, compulsive self-checking, interpersonal distrust, and intuitive eating, as well as years of clinical experience and study field of the dietitians [17]. It is therefore imperative to understand the levels of weight bias and the associated factors with weight bias among dietitians. This understanding is fundamental to the development of effective interventions to address stigma and provide effective nutritional care. Therefore, the aim of this study was to identify explicit weight bias, and the factors associated with weight bias among Turkish dietitians. Secondly, we investigated the effect of the patient’s weight status on the dietitian’s assessment and dietetic practice by using images of individuals with different body weights for the same hypothetical case.

Methods

Study design and participants

This cross-sectional study was conducted between August 2021 and November 2021. The study was registered at ClinicalTrials.gov under the identifier NCT06624111. The study sample for the questionnaire consisted of dietitians working in different regions of Türkiye. The data were collected using a web-based questionnaire on SurveyMonkey. The survey was distributed to dietitians through social media announcements, dietitians messaging groups, and forums. The inclusion criteria for the study were as follows: subjects had to have graduated from a nutrition and dietetics department of a university in Türkiye with at least a bachelor's degree, and they had to participate in the study voluntarily. Dietitians who were pregnant or lactating were excluded due to significant changes in body composition during these periods, which could affect BMI and potentially confound the relationship between BMI and weight bias. A total of 739 dietitians accessed the survey link, but 160 of them did not respond to any of the questions. Consequently, 579 participants were included in the study, and 411 participants who completed all sections of the questionnaire and correctly answered the attention-check questions were included in the analysis (Fig. 1).

Data collection

The online questionnaire encompassed a range of socio-demographic information, including age, sex, educational level, marital status, and years of work experience. Anthropometric data, including height and weight, were collected to calculate BMI. Furthermore, participants were asked to self-report on their personal and family history of obesity, including whether they had ever felt overweight or obese themselves or had a family member with obesity (Supplementary Table 1). The questionnaire also included the FPS, ATOP, and Beliefs About Obese Persons (BAOP) scales.

After completing the scales, dietitians were randomly assigned to a hypothetical case study, which was developed based on previous studies [18, 19]. Randomization was performed using online survey platform (SurveyMonkey). In one case there was a photograph of a woman with higher body weight and in the other of a woman with lower body weight. All the information (demographics, biochemical parameters, diet history, and physical activity level) about the cases was the same (Table 1); only their weight and, therefore their photographs were different. The dietary history of the cases was in accordance with the national guideline recommendations and biochemical parameters were within the normal range [20]. The dietitians were informed that the patient in the photograph was seeking consultation due to lactose

intolerance. Lactose intolerance was chosen because nutritional recommendations of this condition are not associated with patient's weight, and it has been used in previous studies [18, 19, 21]. The photographs of the cases were the same with previous study and used with permission from the corresponding author [19].

The case study included evaluating the diet quality and biochemical status of the patient, providing dietary and exercise recommendations, and assessing expectations of dietitians regarding the patient's adherence to the diet. The questionnaire used for case study was adapted from previous studies [18, 19] (Supplementary Table 1). Dietitians rated the diet quality and biochemical status of the case with a 5-point Likert type scale (1=very good, 5=very poor). Regarding lactose intolerance, statements including "dairy products should be completely eliminated", "low lactose products can be recommended", "probiotic supplementation can be recommended", "lactase supplementation can be recommended", "low glycemic index foods can be recommended" were assessed using a 5-point Likert-type scale (1=strongly disagree, 5=strongly agree). Dietitians' recommendations on parameters such as body weight, physical activity, energy intake, carbohydrate intake, protein intake, fat intake, fiber intake, water consumption, and portion size were assessed using a 5-point Likert-type scale (1=should be greatly reduced, 5=should be greatly increased). Dietitians' expectations regarding the patient's adherence to the diet were assessed using the statements "the patient is willing to be treated", "the patient is expected to comply with the treatment recommendations", "the patient will be successful in making dietary changes", "the patient will be able to sustain recommendations", "the patient understood treatment recommendations". A 5-point Likert type scale (1=strongly disagree, 5=strongly agree) was used to rate these statements.

Measures

FPS

Participants explicit weight bias was assessed with 14-item FPS [22]. The Turkish adaptation of the scale was conducted by Hayran et al. [23]. The scale includes 14 pairs of adjectives used to describe people with obesity. Each adjective is paired with another adjective corresponding to its opposite meaning (e.g. lazy-industrious). Participants were asked to indicate the adjectives that best express their feelings and beliefs about individuals with obesity on a scale from 1 to 5. The score is obtained by summing points from each question and dividing it 14, resulting in an average score that range from 1 to 5. Higher scores indicate greater fat phobia. A score 2.5 indicates a neutral attitude, a score <2.5 indicates positive and >2.5 indicates negative attitudes [19, 24]. A score

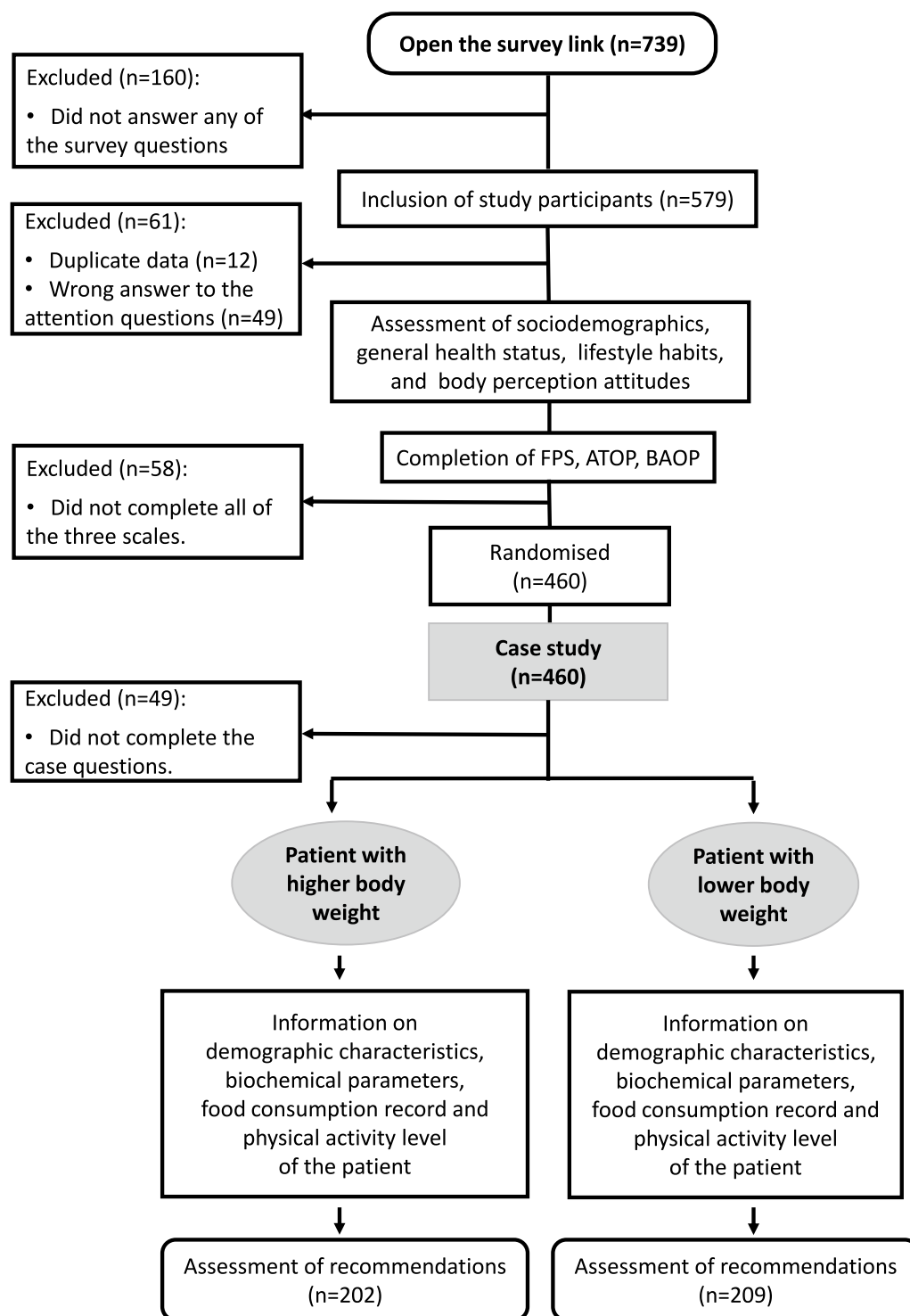


Fig. 1 Flow diagram of the study design

above 4.4 is considered to indicate high fat phobia [22, 24]. In this study, the Cronbach's α coefficient was 0.91, indicating excellent reliability.

ATOP

The scale was developed by Allison et al. [25] to assess attitudes towards people with obesity. The Turkish

Table 1 Information on demographic characteristics, biochemical parameters, dietary record and physical activity level of the hypothetical patient

Demographics	
Name-Surname	Aylin C
Age	28
Gender	Female
Occupation	Medical secretary
Biochemical parameters	
Blood pressure	110/70 mmHg
Fasting blood glucose	90 mg/dL
HbA1C level	%5.5
HDL cholesterol	60 mg/dL
LDL cholesterol	110 mg/dL
Triglyceride	130 mg/dL
Diet History Assessment (from 24 h. recall)	
Dairy	3 portions/day
Meat and meat alternatives	3 portions/day
Bread and cereals	4 portions/day
Vegetables	3 portions/day
Fruits	2 portions/day
Water consumption	2.5 L/day
Physical Activity Level (self-reported)	
Tempo walking	1 h/5 days a week
Strength training	2 h/3 days a week

adaptation of the scale was performed by Dedeli et al. [26]. The scale consists of 20 statements including positive and negative attitudes towards people with obesity. The statements are rated using a 6-point Likert scale (strongly disagree—strongly agree). The total score ranges from 0 to 120, with higher scores reflecting more positive attitudes towards people with obesity [26]. In this study, the Cronbach's α coefficient was 0.79, indicating good reliability.

BAOP

This scale was developed by Allison et al. [25] to assesses the degree of belief that obesity is controllable. The scale consists of eight statements. The evaluation of statements is based on a 6-point Likert scale (strongly disagree-strongly agree). The total score ranges from 0 to 48, with higher scores indicating stronger beliefs that obesity is not within an individual's control [26]. The Turkish adaptation of the scale was performed by Dedeli et al. [26]. In this study, Cronbach's α coefficient was 0.41, indicating low reliability. Therefore, the scale score was evaluated solely as a descriptive statistic and was not included in further analyses.

Table 2 Selected characteristics of the study participants

Age (Mean \pm SD)	27.31 \pm 6.35
Sex, n (%)	
Male	41 (10.0)
Female	370 (90.0)
Marital status, n (%)	
Married	109 (26.5)
Single	302 (73.5)
Education, n (%)	
Bachelor's degree	292 (71.0)
Master's degree	97 (23.6)
Doctoral degree	22 (5.4)
Duration of working life, years, (Mean \pm SD)	4.12 \pm 6.23
BMI (Mean \pm SD)	21.54 \pm 2.93
FPS (Mean \pm SD)	2.98 \pm 0.79
FPS category, n (%)	
Neutral-positive (≤ 2.5)	136 (33.1)
Low-moderate (2.51–4.39)	265 (64.5)
High (≥ 4.4)	10 (2.4)
ATOP (Mean \pm SD)	66.75 \pm 14.21
BAOP (Mean \pm SD)	16.77 \pm 4.60

ATOP Attitudes toward obese persons scale, BAOP Beliefs about obese persons scale, BMI Body mass index, FPS Fat phobia scale, SD Standard deviation

Data analysis

The study data were analyzed using SPSS (Statistical Package for the Social Sciences) version 25. Categorical data were presented as numbers and percentages, and continuous variables were expressed as means and standard deviation (SD). The normality of the data was evaluated using Skewness and Kurtosis and the values between -1.5 and $+1.5$ were considered normally distributed [27]. Multiple linear regression analyses were employed to identify factors associated with FPS and ATOP scores. The differences between the distributions of recommendations given by dietitians to patients with higher or lower body weight and their expectations regarding the implementation of the diet were assessed using the chi-square (χ^2) test. Post-hoc tests were used to analyze the groups that showed significant differences. The Bonferroni correction was employed to adjust the significance levels. All analyses were evaluated at a significance level of $p < 0.05$.

Results

The mean age of the study sample was 27.31 ± 6.35 years and the majority (90.0%) of the dietitians were female. The mean FPS score of the dietitians was 2.98 ± 0.79 . A majority of the dietitians (64.5%) had low or moderate fat phobia, while 2.4% had high fat phobia. The mean scores

Table 3 Multiple linear regression analysis for FPS and ATOP scores

Independent variables	FPS				ATOP			
	β	SE	95.0% Confidence Interval for β		β	SE	95.0% Confidence Interval for β	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
(Intercept)	3.718	0.350	3.030	4.407	64.47	6.347	51.992	76.945
Sex (ref. female)	0.317	0.138	0.046	0.588	-6.701	2.499	-11.614	-1.789
BMI (kg/m ²)	-0.036	0.016	-0.067	-0.004	0.194	0.289	-0.373	0.762
Duration of working life (years)	-0.006	0.007	-0.019	0.007	-0.086	0.119	-0.321	0.148
Family member with obesity (ref. yes)	0.168	0.078	0.015	0.322	-2.537	1.418	-5.324	0.251
History of feeling overweight (ref. yes)	-0.217	0.096	-0.406	-0.029	1.049	1.737	-2.367	4.464
Adj. R squared = 0.031 (F = 3.64, p = 0.003)					Adj. R squared = 0.017 (F = 2.38, p = 0.038)			

ATOP Attitude towards obese people scale, β Estimate, BMI Body mass index, FPS Fat phobia scale, SE Standard error

of the ATOP and BAOP scales were 66.75 ± 14.21 (min–max: 24–104) and 16.77 ± 4.60 (min–max: 5–35), respectively (Table 2).

The results of the multiple linear regression analysis with FPS and ATOP scores as dependent variables are presented in Table 3. Sex, BMI, history of feeling overweight and having a family member with obesity were significantly associated with FPS scores. Whereas only sex was found to be associated with ATOP scores. Men exhibited higher fat phobia ($\beta = 0.317$, $p = 0.022$) and more negative attitudes towards people with obesity ($\beta = -6.071$, $p = 0.008$) compared to women. BMI was negatively associated with FPS scores ($\beta = -0.036$, $p = 0.026$). However, dietitians without a history of feeling overweight had significantly lower FPS scores ($\beta = -0.217$, $p = 0.024$). Participants without a family member with obesity ($\beta = 0.168$, $p = 0.032$) had higher FPS scores compared to those with a family member with obesity. Participants without a family member with obesity were also lower ATOP scores, indicating a more negative attitude towards people with obesity, but this trend did not reach statistical significance ($\beta = -2.537$, $p = 0.074$). The duration of the working year was not associated with FPS or ATOP scores.

There was no significant difference in FPS, ATOP and BAOP scores between dietitians assigned to cases with higher or lower body weight ($p > 0.05$ for each, Supplementary Table 2). There was no significant difference in the dietitians' recommendations regarding the patient's complaint of lactose intolerance across the cases ($p > 0.05$ for each, Supplementary Table 3).

The dietitians' assessments of the diet quality and biochemical status of the cases, as well as the recommendations regarding the patient's diet are presented in Table 4. Dietitians who saw the photograph of the case with higher body weight were less likely to rate the patient's biochemical status as very good (19.3%) and more likely to rate the patient's biochemical status as average (30.7%) compared to those who saw the photograph of case with lower body weight (32.6% and 14.8%, respectively). There was also a difference in the dietitians' assessment of diet quality. The proportion of dietitians who assessed the patient's diet quality as very good was lower in those who assessed the case with obesity ($p = 0.025$). The dietitians' recommendations for the patient's diet also differed depending on the patient's weight status. Dietitians were more likely to recommend greatly reducing or reducing body weight (97.9%), energy intake (40.1%), carbohydrate intake (25.2%), fat intake (33.7%) and portion size (45.5%) for woman with higher body weight compared to woman with lower body weight (1.4%, 0.5%, 5.3%, 10.5%, 1.4%, respectively). Furthermore, dietitians who saw the case with higher body weight were more likely

to recommend that physical activity (13.9%), fiber intake (29.2%) and water consumption (71.8%) should be greatly increased or increased compared to dietitians who saw the case with lower body weight (2.4%, 16.7%, 45.5%, respectively). Protein recommendations were also different between groups. The dietitians who evaluated patient with higher body weight were more likely to recommend an increased (38.6%) or decreased (9.4%) protein intake than those who assessed a patient with lower body weight (29.2% and 3.3%, respectively).

There was no significant difference in the expectations of dietitians regarding patient adherence to the dietary recommendation between groups ($p > 0.05$ for each, Table 5). Most dietitians (71.3%–80.9%) strongly agreed or agreed with the statements that the patient was “willing to be treated”, “would comply with treatment recommendations”, “would be successful in making dietary changes”, “would be able to sustain recommendations”, and “understood treatment recommendations”.

Discussion

In this study, weight bias and factors associated with bias among Turkish dietitians were investigated. It was found that most of the dietitians (66.9%) had fat phobia (an FPS score > 2.5) and fat phobia was associated with sex, BMI, having a family member with obesity, and history of feeling overweight. Additionally, we examined how the body weight of a patient who consulted a dietitian for a reason unrelated to the body weight affected professional practices. The results indicated that the appearance of the person, having a higher body weight, influenced the dietary assessment and recommendations of dietitians.

Previous studies have reported that dietitians possess varying levels of weight bias towards people with obesity. In a study of dietetic students in the United States the mean FPS score was 3.7 ± 0.51 [18]. Similarly, a study from the UK reported the mean FPS scores of 3.8 ± 0.4 for dietetic trainees and 3.9 ± 0.5 for nutrition trainees [24]. In Australia [19], dietitians had a mean FPS of 3.37 ± 0.38 , while in Poland the mean FPS was 3.51 ± 0.48 [28]. Conversely, lower scores were reported among New Zealand registered dietitians (2.63 ± 0.39) [21] and Ghanaian dietetic students (2.61 ± 0.90) [29]. In Australia, the prevalence of weight bias (FPS score > 2.5) among dietitians was 99% [19]. In our study, the mean FPS score was 2.98 ± 0.79 and 64.5% of the dietitians exhibited low or moderate fat phobia (an FPS score > 2.5). High fat phobia was present in 2.4% of the participants. Cultural differences and variations in body size ideals may explain the different levels of weight bias across studies. Thinness is more idealized in cultures that are more socioeconomically developed and where modernization and westernization are higher [30]. Moreover, a recent study found

Table 4 Comparison of dietitians' assessments and recommendations of the patient according to the patient's weight status

Recommendations	Patient with higher body weight (n = 202) n (%)	Patient with lower body weight (n = 209) n (%)	P
Biochemical Status			
Very Good	39 (19.3) ^a	68 (32.6) ^b	< 0.001
Good	87 (43.1) ^a	102 (48.8) ^a	
Average	62 (30.7) ^a	31 (14.8) ^b	
Poor	14 (6.9) ^a	8 (3.8) ^a	
Very poor	-	-	
Diet quality			
Very Good	34 (16.8) ^a	61 (29.2) ^b	0.025
Good	95 (47.0) ^a	89 (42.6) ^a	
Average	51 (25.2) ^a	45 (21.5) ^a	
Poor	20 (9.9) ^a	14 (6.7) ^a	
Very poor	2 (1.0) ^a	0 (0.0) ^a	
Body weight			
Should be greatly reduced/ be reduced	196 (97.0) ^a	3 (1.4) ^b	< 0.001
Should be continued in the same way	6 (3.0) ^a	202 (96.7) ^b	
Should be greatly increased/ be increased	0(0.0) ^a	4 (1.9) ^b	
Physical activity			
Should be greatly reduced/ be reduced	13 (6.4) ^a	20 (9.6) ^a	< 0.001
Should be continued in the same way	161 (79.7) ^a	184 (88.0) ^b	
Should be greatly increased/ be increased	28 (13.9) ^a	5 (2.4) ^b	
Energy intake			
Should be greatly reduced/ be reduced	81 (40.1) ^a	1 (0.5) ^b	< 0.001
Should be continued in the same way	69 (34.2) ^a	145 (69.4) ^b	
Should be greatly increased/ be increased	52 (25.7) ^a	63 (30.1) ^a	
Carbohydrate intake			
Should be greatly reduced/ be reduced	51 (25.2) ^a	11 (5.3) ^b	< 0.001
Should be continued in the same way	84 (41.6) ^a	116 (55.5) ^b	
Should be greatly increased/ be increased	67 (33.2) ^a	82 (39.2) ^a	
Protein intake			
Should be greatly reduced/ be reduced	19 (9.4) ^a	7 (3.3) ^b	0.002
Should be continued in the same way	105 (52.0) ^a	141 (67.5) ^b	
Should be greatly increased/ be increased	78 (38.6) ^a	61 (29.2) ^b	
Fat intake			
Should be greatly reduced/ be reduced	68 (33.7) ^a	22 (10.5) ^b	< 0.001
Should be continued in the same way	114 (56.4) ^a	159 (76.1) ^b	
Should be greatly increased/ be increased	20 (9.9) ^a	28 (13.4) ^a	
Fiber intake			
Should be greatly reduced/ be reduced	0 (0.0) ^a	1 (0.5) ^a	0.003
Should be continued in the same way	143 (70.8) ^a	173 (82.8) ^b	
Should be greatly increased/ be increased	59 (29.2) ^a	35 (16.7) ^b	
Portion sizes			
Should be greatly reduced/ be reduced	92 (45.5) ^a	3 (1.4) ^b	< 0.001
Should be continued in the same way	92 (45.5) ^a	183 (87.6) ^b	
Should be greatly increased/ be increased	18 (8.9) ^a	23 (11.0) ^a	
Water consumption			
Should be greatly reduced/ be reduced	2 (1.0) ^a	4 (1.9) ^a	< 0.001
Should be continued in the same way	55 (27.2) ^a	110 (52.6) ^b	
Should be greatly increased/ be increased	145 (71.8) ^a	95 (45.5) ^b	

The column percentage was calculated. Chi-square independence test was performed to assess the relationship between the variables, with a Bonferroni correction applied to adjust for multiple comparisons

Table 5 Comparison of dietitians' expectations regarding adherence to the diet according to the patient's weight status

Recommendations	Patient with higher body weight (n = 202) n(%)	Patient with lower body weight (n = 209) n(%)	P
The patient is willing to be treated			
Strongly agree/agree	160 (79.2)	156 (74.6)	0.460
Neither agree nor disagree	36 (17.8)	43 (20.6)	
Strongly disagree/disagree	6 (3.0)	10 (4.8)	
The patient is expected to comply with the treatment recommendations			
Strongly agree/agree	152 (75.2)	169 (80.9)	0.384
Neither agree nor disagree	45 (22.3)	37 (17.7)	
Strongly disagree/disagree	5 (2.5)	3 (1.4)	
The patient will be successful in making dietary changes			
Strongly agree/agree	152 (75.2)	164 (78.5)	0.232
Neither agree nor disagree	40 (19.8)	41 (19.6)	
Strongly disagree/disagree	10 (5.0)	4 (1.9)	
The patient will be able to sustain recommendations			
Strongly agree/agree	144 (71.3)	158 (75.6)	0.525
Neither agree nor disagree	53 (26.2)	48 (23.0)	
Strongly disagree/disagree	5 (2.5)	3 (1.4)	
The patient understood treatment recommendations			
Strongly agree/agree	152 (75.2)	162 (77.5)	0.821
Neither agree nor disagree	46 (22.8)	44 (21.1)	
Strongly disagree/disagree	4 (2.0)	3 (1.4)	

The column percentage was calculated. Chi-square independence test was performed to assess the relationship between the variables, with a Bonferroni correction applied to adjust for multiple comparisons

that UK women exposed to thin-ideal images experienced more body dissatisfaction and fear of negative evaluation than Turkish women [31]. Another study revealed that Chinese and American university students did not differ in their responses to the term "thin"; however, the term "fat" was coded faster and more negatively by American students [32]. It is therefore not surprising that relatively lower FPS scores were reported in this study compared to studies conducted in Europe and the US. Still, a significant proportion of the dietitians exhibited fat phobia, indicating that it remains a notable concern within this population. Puhl et al. [18] highlighted the need for interventions to reduce weight bias in dietetic education and

our study supports the need for improvements in this regard in Türkiye.

In this study, many factors were associated with weight bias among dietitians. Being male was associated with higher fat phobia and more negative attitudes towards people with obesity. These results are in line with previous studies conducted with both general populations [33–36] and healthcare professionals [37, 38] which indicated that men exhibited higher levels of weight bias compared to women. In different aspects of life women were more likely to experience weight discrimination compared to men [12]. Additionally, women reported higher weight bias internalization than men [39]. This discrimination may make women more sensitive to anti-fat attitudes or stereotypes related with body weight.

Several theoretical models including social identity theory, socio-cultural theory, and attribution theory have been proposed to explain the underlying mechanisms of weight stigma [40]. According to social identity theory, individuals tend to see the groups to which they feel they belong as superior to others. While they sympathize with their own groups and group members, they may have dismissive thoughts and attitudes towards other groups [40]. In the context of obesity, people who belong to the group of "thin", may have negative thoughts and attitudes towards people living with obesity. Indeed, several studies have reported that BMI is negatively associated with fat phobia [33, 41, 42]. In this study, higher BMI was also negatively associated with fat phobia scores. However, as an interesting point, a history of feeling overweight was found to be associated with higher fat phobia. In the study, dietitians' feelings of being overweight were not objectively assessed using BMI values; instead, perceived overweight was examined. Scott and Rosen [41] reported that higher levels of perceived weight predicted greater fear of fat in US adults. In this case, it could also be possible that those with higher fat phobia perceive themselves as overweight.

In this study, participants without a family member with obesity had higher FPS scores compared to those with a family member with obesity. A multinational study conducted to explore the predictors of anti-fat attitudes across four countries and indicated that weight bias was greater among individuals without family or friends who had experienced weight bias [34]. The fact that having family members living with obesity may be a factor that evokes empathy and prevents the attribution of negative adjectives.

Attribution theory helps to explain weight bias by highlighting how individuals' beliefs about the causes of obesity influence their attitudes and behaviors. According to the theory when conditions are perceived as uncontrollable, individuals are more likely to show sympathy to

situations, however when conditions are regarded as controllable, individuals are more likely to display negative judgments [43]. Research shows that beliefs in the controllability of obesity through individual choices, which make individuals responsible for their body weight, are strongly associated with weight stigma [24, 34, 44]. In this study, the BAOP scale was used to assess explicit beliefs about the causes and controllability of obesity; however, its low reliability (Cronbach's $\alpha=0.41$) precluded its intended use.

Studies conducted with dietitians in different countries have shown that nutritional assessment and dietetic practice were significantly influenced by the weight status of the individual. Puhl et al. [18] conducted a study with 182 dietetics undergraduate students in the United States, randomly assigning them to assess a hypothetical patient referred for lactose intolerance. The study featured patients with identical health and diet information across profiles, with only sex and weight differing. Students who viewed profiles of patients with obesity evaluated patients diet quality and health status as worse compared to those who viewed the profiles without obesity. In another study, Diversi et al. [19] investigated the weight bias among accredited dietitians in Australia. The dietitians' assessments were significantly influenced by the photographs of the case who had consulted the dietitian for lactose intolerance. If the case photograph was of an individual with obesity, dietitians were more likely to rate the individual's health status as significantly worse and to offer unsolicited weight management advice. Similar findings were also reported for New Zealand registered dietitians [21]. In line with the previous studies, in our study the evaluations and professional recommendations of dietitians varied according to the case photographs. Although the biochemical variables and dietary records of both cases were the same, and there was no significant difference in the FPS and ATOP scores of the dietitians assigned to the cases, the percentages of those who rated the nutritional and biochemical status of the case as very good were lower among the dietitians who saw the case with higher body weight, reflecting an important assessment bias. Additionally, dietitians who saw the photograph of the case with higher body weight were more likely to make recommendations aligned with weight management. The results suggest that dietitians have some stereotypes that individuals with higher body weight have poorer diet quality and health overall, even when contrary information is present. Encouraging dietitians to focus on individual lifestyles rather than weight-oriented approaches during their training is important in terms of overcoming these stereotypes. Furthermore, even suggestions for weight management are well-intentioned, one of the stigmatizing experiences that patients

with obesity often experience in health care is subjected to dietary recommendation even when they do not intend to discuss weight [45]. Dietitians should be aware that providing unsolicited weight management advice may be a form of weight bias and should be avoided, recognizing that it may have negative consequences for the patient, including discouraging them from seeking health advice [21]. This approach does not ignore the health consequences of being overweight and obesity, which should be addressed within the framework of nutrition and dietetics interventions. Seeking permission from the individuals before discussing topics such as body weight and health risks, discussing when the individual is ready and seeks help, fostering an environment of respect and co-operation are important steps [46]. It is also important to move away from a solely weight-centric approach to a more holistic, health-focused framework. A weight-neutral approach provides dietitians to engage individuals in discussions about health-promoting behaviors, such as adopting nutrient-rich diets and increasing physical activity, without stigmatizing body size [47]. Such strategies, when integrated into personalized dietary interventions, can provide comprehensive support to individuals regardless of their weight.

Previous studies indicated that health professionals have negative stereotypes regarding the adherence to treatment of patients with obesity [48, 49]. However, the results of studies conducted with dietitians are inconsistent. Diversi et al. reported that dietitians' perceptions of the case's future weight management success and compliance with treatment did not vary according to the body weight of the case [19]. Puhl et al. [18] reported that dietetic students rated patients with obesity are less likely to comply with treatment recommendations than patients without obesity. However, there was no difference in other statements such as "understanding and being receptive to their treatment recommendations", "being motivated to make dietary changes", "being able to make dietary changes" and "maintain those changes over time". In this study, there was no significant difference in the expectations of dietitians regarding patient adherence to the diet according to the patient's weight status. Dietitians reported a high degree of compliance for both cases which shows dietitians appear to hold unbiased and positive views about their patients' ability to adhere to dietary recommendations. Despite the high prevalence of fat phobia among dietitians, their positive opinions regarding individuals' adherence to dietary recommendations may appear contradictory. However, dietitians are a professional group who often choose their careers by a desire to help others. They also perceive themselves as the most qualified health professionals for obesity management and feel more confident and satisfied when working with

this group [19]. This confidence, coupled with an ethical obligation to maintain a supportive approach, may help explain this apparent contradiction. On the other hand, social desirability bias should also be considered as a factor that may have shaped participants' responses, and it warrants attention when interpreting the results.

Strengths and limitations of the study

The study's key strengths lie in its assessment of both explicit and implicit biases. Explicit biases were evaluated using the FPS and ATOP scales, while implicit biases were assessed through a case study approach, which was conducted on a relatively large sample size. Furthermore, the case study provided a comprehensive examination of the impact of weight bias on dietitians' judgments in patient assessment and professional practice. However, this study has several limitations. Firstly, the women in the photographs were not identical. However, we used the same photographs as previous studies [18, 19] which has also provided an advantage for making direct comparisons. Secondly, the data were collected via an online survey, which may have led to selection bias. Online surveys often attract participants who are interested in the survey topic, which may limit the generalizability of the findings. Thirdly, the FPS, ATOP, and BAOP scales were presented before the case study, which may have introduced question-order bias. Besides, questions related to dietary recommendations were presented in a Likert scale format. Thus, the structure of the survey may have guided the dietitians' responses. This approach may have limited the depth of their recommendations. In addition, social desirability may also have influenced the dietitians' responses. Participants might have answered questions in a manner that they believed to be more socially acceptable or favorable, rather than providing their true opinions or feelings. This is especially relevant in topics related to body image and obesity, where societal pressures and norms can strongly influence responses. Future research could provide more comprehensive insights by employing qualitative methods. Analyzing dietary advice and recommendations of interviews of dietitians using standardized patients would also be an interesting area for further studies which allow to collect information without guided questions. This would offer a better reflection of real-life situations and provide a deeper understanding of dietitians' recommendations.

Conclusions

In conclusion, this study revealed that fat phobia is common among dietitians in Türkiye. In addition, when the dietitians saw a photograph of a case with higher body weight, they automatically exhibited stereotypes

regardless of the nutritional and health status of the patient and showed weight bias. They also gave many unsolicited weight-related recommendations. The findings of this research demonstrate the impact of fat phobia and weight bias among dietitians on their professional practices, emphasizing the necessity of resolving this issue. Addressing weight bias and weight stigma throughout dietetic education in Türkiye is still an area that has received limited attention, and this study highlights the need for efforts to reduce bias among dietitians.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-025-06883-8>.

Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

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Authors' contributions

The study was conceptualized and designed by EBK, YK and ŞD. ŞD was responsible for data collection. EBK and YK coordinated and supervised data collection. EBK, YK, ŞD analyzed the data and wrote the manuscript. EBK critically reviewed and revised the manuscript. All authors have approved the final manuscript as submitted and accept responsibility for all aspects of the work.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the Social Research Ethics Committee of İzmir Katip Çelebi University (Registration number:2021–02-08), and informed consent were obtained from all study participants. The study conducted in accordance with the Declaration of Helsinki.

Consent for publication

This study presents a hypothetical case and does not include real individuals' information, consent for publication is not applicable.

Competing interests

The authors declare no competing interests.

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