The relationship between media image, body image, and nutritional status: research on professional female volleyball players

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ABSTRACT

This study was conducted to determine the media image and its impact on body image and nutrition status of 100 professional female volleyball players aged between 18-30 in teams affiliated to the Turkish Volleyball Federation. Their dietary habits and use of food supplement products were recorded with a questionnaire prepared by the researcher and administered face-to-face. Anthropometric measurements taken, body mass indexes (BMI) calculated, body compositions determined with bioelectric impedance analysis, and 24-hour retrospective nutrient consumption records were taken. The "Sociocultural Attitudes Towards Appearance Scale" (SATAQ-3) was used in order to evaluate the media image of women volleyball players. The (PSPP) and "Body Parts and Properties Satisfaction Scale" were used for determining their level of satisfaction with their own appearance. The average age of this sample of female volleyball players was 24.3±3.55 years. Their body mass index (BMI) was 20.7±1.48 kg/m^2 on average. A statistically significant negative relationship was found between "feeling pressure from the media" (a sub-dimension of the SATAQ-3), and "body attractiveness" a sub-dimension of the PSPP. Feelings of body attractiveness decreased as media pressure increased ($p<0.05$). A statistically significant negative relationship was found between trying to look like the celebrities in the media and "sports talent and body attractiveness" ($p<0.05$). Participants felt their bodies were less attractive as compared with celebrities ($p<0.05$). No significant relationship was found between the sub-dimensions of the SATAQ-3and the "Body Parts and Properties Satisfaction Scale" ($p>0.05$). We conclude that media image can be an important risk factor for increased body dissatisfaction, impaired body perception, and the formation of a negative body image in female Turkish volleyball players.

Keywords: Media Image, body image, body perception, body dissatisfaction, volleyball players, female

INTRODUCTION

Body dissatisfaction is defined as a negative evaluation of one's body, body weight, and body parts and not having the desired physical appearance. Body image, on the other hand, is shaped together with sociocultural attitudes, such as emotions, thoughts, behaviors, relationships with family and peers, and the media, which are among the guiding factors since early childhood (1). People with body image disorders can present with negative body image, depression, obesity, body dissatisfaction, and eating disorders (2).

Gender is one of the important factors affecting body image. Females are more concerned about body image than males (3). Unrealistic body mass and fat ratio goals place intense pressure on women, and this jeopardizes both their performance and health in the short and long term (4).

Mass media, which is another factor affecting body image, uses the female body image in areas such as advertising, product marketing, and appealing news content (5). When women compare themselves to idealized bodies in the media, they internalize this ideal body image as beautiful and attractive. Women who are exposed to body images that are perceived as beautiful and attractive but are difficult to achieve feel inadequate (6). Studies investigating the body measurements of both genders have found that women are depicted as abnormally slim or thin and that men are depicted at their standard weights. It has been observed that women have a lower confidence in their body image than men (7,8).

The body of studies investigating the effects of media image on genders is rapidly increasing (9-11). In addition to exposure to the ideal media image, sociocultural pressure, family, and the application of diets containing restricted energy for losing weight, and the resulting pressure to be thin are important risk factors for increasing body dissatisfaction (10, 12, 13).

Arusoğlu et al. (14) observed that a preference for unhealthy food or excessive physical activity, which develops with low self-esteem and body dissatisfaction, leads to eating disorders. With this in mind, it has been determined that sportspeople with low self-esteem and body dissatisfaction become further dissatisfied with the way they perceive their body weight, body image, and body measurements and that eating disorders increase (14).

Professional athletes are a group in which pressures such as maintaining ideal body weight and ideal body shape are widely seen. This pressure also affects their eating behavior and weight control. Sportspeople exhibit more behavioral disorders than individuals who do not participate in sports, and sportswomen have higher eating behavior disorders and drive for thinness than sportsmen (7). Particularly sportswomen can feel body image pressure due to both socio-cultural and sports-related reasons, and they are at risk of body dissatisfaction and experience higher stress than others (3,15).

Body dissatisfaction in sportspeople is related to the type of sport. It is seen that sportspeople who do sports such as ballet and gymnastics, where physical appearance is at the forefront, have higher body dissatisfaction (16). In Turkey, sportswomen are mainly perceived as weightlifters, athletes, and volleyball players due to how they are portrayed in the media. For example, news about female volleyball players displaying their beauty and tall stature is frequently encountered in the media (17).

Following up the body dissatisfaction among sportspeople and making the necessary interventions can prevent low body perception and eating disorders that may occur in the future (18, 19). This study was conducted to investigate the effects of media image on body satisfaction and nutritional status in professional female volleyball players in Turkey.

MATERIALS AND METHODS

This study was carried out between January 1, 2019 and March 31, 2019 on 100 female individuals who were 18 – 30 years old, were professional volleyball players playing in teams affiliated to the Turkish Volleyball Federation, and voluntarily agreed to participate in the study. This study was approved by Review Board numbered KA 19/01. The individuals participating were asked to complete a questionnaire with multiple-choice and open-ended questions, administered face-to-face.

Body composition analysis with anthropometric measurements

Body weights were measured using the TANITA BC-418 MA body composition analyzer. Height was measured using a height meter with the feet bare and kept together, and the head in the Frankfurt plane. The midpoint between the acromial process on the shoulder and the olecranon process on the elbow was marked, and the upper-middle arm circumference was measured with a tape measure. Waist circumference was measured with a measuring tape in a horizontal plane from the narrowest part of the upper body, between the lowest rib and the iliac crest, while the individuals were standing, the abdomen was free, the feet were kept together, and the arms were parallel to the legs. Hip circumference was measured in the horizontal plane from the widest point around the buttocks (20,21). The body composition of individuals was measured by using the TANITA BC-418 MA device based on the bioelectrical impedance analysis (BIA) method. The BIA method measures the electrical permeability difference of lean tissue mass and fat. This measurement provided data about body fat percentage (%), body fat mass (kg), body muscle mass (kg), and body total water percentage (%). Before the measurement, individuals were asked not to engage in heavy physical activity for the last 24-48 hours, not to drink alcohol for the last 24 hours, to eat not later than 2 hours before the measurement, not to drink much water before the measurement, and not to drink tea or coffee for the last 4 hours (15,20).

Evaluation of food consumption status

To evaluate the daily energy and macronutrient intakes, continuous three-day food consumption recalls on one training day and two non-training days, were conducted by a researcher through face-to-face interviews. The computer-assisted nutrition software “Nutrition Information Systems (BEBIS)" developed in Turkey, was used to estimate daily energy and nutrient intakes.

The Satisfaction with Body Parts and Features Scale

The “Satisfaction with Body Parts and Features Scale” (BPSS) developed by Berscheid et al. (22), was used to measure participants’ body satisfaction. The scale has 26 items which are evaluated using a five-point rating structure with options ranging between “extremely satisfied” and “very dissatisfied”. A high score on the scale indicates satisfaction with body image. The adaptation of this scale to the Turkish context was carried out by Gökdoğan (23).

The Body Attractiveness Subscale of Physical Self-Perception Profile

The Body Attractiveness Subscale of Physical Self-Perception Profile (PSPP) developed by Fox and Corbin (24), was used to measure the body perceptions of participants. The scale has five subscales (sport competence, physical condition, body attractiveness, strength, and general physical competence), each of which has 6 items. For each item, two different statements are presented, and the participants are asked to choose one of the statements, “fully

suitable for me" or "partly suitable for me." While evaluating each item, it was requested to give a score between 1 and 4. A score of 4 means high attractiveness, and a score of 1 means low attractiveness. A total of 6 to 24 points are obtained in the scale. The Turkish validity and reliability study of this scale was conducted by Aşçı and Zorba (25).

The Sociocultural Attitudes towards Appearance Questionnaire-3

This scale was used to evaluate the effect of media image on the body satisfaction. The scale was developed by Heinberg and Thompson (26) in 1995, and its revised and updated version (2004) was used in the present study (27). Adaptation of the scale to Turkish and its validity and reliability were determined by Kalafat, et al. (28). The Sociocultural Attitudes towards Appearance Questionnaire-3 (SATAQ-3) is a five-point Likert-type scale with options ranging from "strongly disagree" (1) to "strongly agree" (5). A high score in the assessment indicates satisfaction with body image. (28).

Data analysis

The study data were evaluated using the SPSS 20.0 software package. Data collected from continuous (quantitative) variables utilized such descriptive statistics as mean ($\bar{X}$) and standard deviation (SD) and parametric tests such as Spearman correlation coefficient. Percentages were used for categorical variables and non-parametric tests were used for variables that did not meet the normality assumption using the Shapiro-Wilk test when $n \leq 30$, and the Kolmogorov Smirnov test when $n > 30$. For example, the non-parametric Mann Whitney U test was used to examine the differences between non-training days and training days. The level of significance was taken as $p < 0.05$.

RESULTS

The mean age of the participants was 24.3±3.55 years. The participants had been playing volleyball for an average of 12.3±3.71 years. The mean body fat was 20.7±3.48% and the mean body muscle mass was 48.4±6.12 kg (Table 1).

As seen in Table 2, ıt was found that daily dietary energy intake (kcal), carbohydrate (g), protein (g), fiber (g) and omega 6 (g) intake and the percentage of the daily energy intake from protein (%) and polyunsaturated fatty acids (PUFA) (%) of the participants on training days was significantly higher than on non-training days ($p<0.05$). While the mean percentage of the daily energy intake from fat of the participants on non-training days was 48.2±6.44%, it was 44.9±8.28% on training days ($p<0.05$).

The mean score of the participants from the "trying to look like media figures" subscale of the SATAQ-3was found as 29.4±7.48. The overall scores of the participants from the SATAQ-3were found to range between 30 and 150, with the mean score being 99.8±32.81. The mean score of the participants was 13.4±1.9 from the PSPP. The mean score of the participants from the "body appearance" subscale of the Satisfaction with Body Parts and Features Scale was 31.0±4.02. The participants' mean score from the "face" subscale was 40.7±4.41 (Table 3).

As shown in Table 4, as media pressure on female volleyball players increased, the feeling of body attractiveness decreased ($p<0.05$). A statistically significant negative correlation was found between trying to look like media figures and sports competence and body attractiveness ($p<0.05$). The more these women compared their bodies to that of media figures, the more their feelings of body attractiveness decreased ($p<0.05$).

Table 1. General characteristics of this sample of female Turkish volleyball players

	Female (n:100)	
	$\bar{X}$ ±SD	Lower-Upper
Age (year)	24.3±3.55	18-29
Total experience as a volleyball player (year)	12.3±3.71	3-21
Body weight (kg)	64±9.04	49.7-89.3
Height (cm)	178±8.79	160-198
Upper middle arm circumference (cm)	25.4±2.15	21-32
Waist circumference (cm)	70.0±4.96	60-80
Waist/hip ratio	0.7 ± 0.03	0.64-0.78
Body fat percentage	20.7 ± 3.48	10.9-27
Body fat mass (kg)	13.3 ± 3.47	5.6-22.5
Body muscle mass (kg)	48.4 ± 6.12	38.1-62.3
Total body water percentage	35.8 ± 3.95	28.7-53.2

$\bar{X}$: Mean, SD: Standard Deviation

Table 2. Dietary energy and macronutrient intakes of female Turkish volleyball players

	Female (n:100)						
	Training days			Non-training days			
	$\bar{X}$ ±SD	Lower	Upper	$\bar{X}$ ±SD	Lower	Upper	p
Energy (kcal)	1633.7±215.73	1028.27	2091.90	1441.2±205.52	1023.33	2133.41	**0.000***
Carbohydrate (g)	133.2±36.15	48.89	223.04	114.7±28.14	63.04	203.32	**0.000***
Carbohydrate (TE%)	33.4±8.47	16.00	52.00	32.6±6.55	20.00	52.00	0.435
Protein (g)	86.8±20.70	38.09	127.25	67.2±14.75	32.22	113.90	**0.000***
Protein (TE%)	21.8±4.74	10.00	34.00	19.2±3.38	8.00	31.00	**0.000***
Fat (g)	82.7±19.71	36.38	125.85	78.1±15.76	47.88	107.68	0.110
Fat (TE%)	44.9±8.28	23.00	63.00	48.2±6.44	33.00	62.00	**0.004***
SFA (%)	28.2±8.48	10.80	44.78	28.0±7.55	13.55	46.11	0.925
MUFA (%)	31.1±9.16	12.37	56.67	28.6±6.86	16.13	46.31	0.084
PUFA (%)	18.2±7.07	2.61	32.87	16.3±5.87	4.77	34.57	**0.032***
Cholesterol (mg)	373.3±162.65	92.00	809.50	351.9±134.39	94.90	707.20	0.381
Omega-3 (g)	2.3±1.33	0.68	7.73	2.3±1.12	0.81	6.21	0.924
Omega-6 (g)	15.7±6.71	1.93	29.95	13.7±5.25	3.35	27.93	**0.029***
Fiber (g)	19.7±5.55	7.68	35.37	16.7±5.76	8.49	43.81	**0.000***

$\bar{X}$: Mean, SD: Standard Deviation, S: Number; %: Percentage, SFA: Saturated fatty acids; MUFA: Monounsaturated fatty acids; PUFA: Polyunsaturated fatty acids, TE: Total energy, Mann Whitney U Test, *$p<0,05$

The amount of consumed energy (kcal), protein (g), and fat (g) decreased significantly as the use of media as an informational source increased ($p<0.05$). At the same time, a significant and negative correlation was found between media pressures and the amount of energy (kcal), protein (g), and fat (g) consumed on non-training days ($p<0.05$). As the participants' efforts to look like media figures and they increasingly compared their bodies to that of media figures increased, the amount of energy (kcal) and protein (g) they consumed on non-training days decreased ($p<0.05$). As participants' scores on the SATAQ-3increased, the amount of energy (kcal), protein (g), and fat (g) consumed decreased ($p<0.05$).

Table 3. Mean scores of the female volleyball players from the subscales of media image and body image scales

		Female (n:100)	
		$\bar{X}$ ±SD	Lower-Upper
The Sociocultural Attitudes towards Appearance Questionnaire	Media as an informational source	28.4±11.54	9-45
	Media pressures	21.4±9.26	7-35
	Trying to look like media figures	29.4±7.48	11-40
	Comparison of the body to that of media figures	21.1±6.74	6-30
	Overall score of the questionnaire	99.8±32.81	30-150
The Body Attractiveness Subscale of Physical Self-Perception Profile	Sport competence	14.4±1.63	10±19
	Physical condition	14.7±1.87	10±20
	Body attractiveness	13.4±1.9	10±21
	General physical competence	14.3±1.78	10±18
	Strength	12.5±2.23	7±19
The Satisfaction with Body Parts and Features Scale	General body appearance	31.0±4.02	18±35
	Face	40.7±4.41	29±45
	Body parts	17.5±2.75	11±20
	Body	22.0±3.07	13±25

$\bar{X}$: Mean, SD: Standard Deviation

DISCUSSION

The media, which has become a part of our lives with the development of technology, can cause an increase in negative body image perception and dissatisfaction with body, for example through idealized messages of unrealistic body thinness. Increased body dissatisfaction, especially in young adults, paves the way for the development of unhealthy behaviors. As a result, they may exhibit the precursor behaviors of eating disorders, such as restricted diets, frequent dieting, excessively vigorous physical activities, and use of products such as diuretics and laxatives (29).

In a study examining the effect of self-esteem on body image in women with obesity, exposure to media images was found to have an impact on self-esteem and body image, increasing as individuals considered the media as a more important source of information (30). One systematic review concluded that social media use and exposure to visual content were associated with body dissatisfaction, dietary restriction, overeating, and healthy food choices (31).

In a study examining appearance pressures on sportspeople, it was stated that general sociocultural pressures, body attractiveness and body dissatisfaction experienced by women may lead to restricted diet practices and bulimic symptoms (32). Elite sportspeople are defined as a group that may be exposed to ideal body image pressures. Sportspeople have a competitive culture and are exposed to more pressure for eating behavior and weight control to maximize their performance (33). Volleyball is a branch of sport that attracts great attention both in the international arena and in Turkey. Individuals who are interested in volleyball need basic motor characteristics, such as strength, speed, endurance, capacity, and coordination. One of the important points for sportspeople to maintain a high level of performance is their physical fitness (34).

Table 4. Relationship between the scores of the female volleyball players from the Sociocultural Attitudes towards Appearance Questionnaire and other scales and their nutritional status

		Female (n:100)									
		Media as an informational source		**Media pressures**		**Trying to look like media figures**		**Comparison of the body to that of media figures**		**Overall score of the Sociocultural Attitudes towards Appearance Questionnaire**	
		r	**p**	**r**	**p**	**r**	**p**	**r**	**p**	**r**	**p**
The Body Attractiveness Subscale of Physical Self-Perception Profile	**Sport competence**	-0.195	0.053	-0.136	0.177	-0.205	**0.042***	-0.043	0.670	-0.180	0.076
	Physical condition	-0.137	0.175	-0.103	0.308	-0.173	0.087	-0.106	0.294	-0.135	0.185
	Body attractiveness	-0.136	0.181	-0.193	**0.045***	-0.226	**0.025***	-0.194	**0.040***	-0.205	0.053
	General physical competence	-0.028	0.780	-0.052	0.607	-0.138	0.172	-0.072	0.474	-0.099	0.330
The Satisfaction with Body Parts and Features Scale	**Strength**	0.008	0.935	0.053	0.601	0.024	0.810	0.011	0.914	0.044	0.667
	General body appearance	0.075	0.459	0.141	0.163	0.091	0.369	0.085	0.399	0.088	0.391
	Face	0.083	0.414	0.139	0.168	0.087	0.392	0.094	0.352	0.087	0.394
	Body parts	0.132	0.194	0.070	0.490	0.024	0.815	-0.026	0.797	0.062	0.546
	Body	-0.028	0.780	-0.052	0.607	-0.138	0.172	-0.072	0.474	-0.099	0.330
Dietary nutrients consumed on non-training days	**Energy, kcal**	-0.306	**0.002***	-0.330	**0.001***	-0.196	**0.048***	-0.302	**0.002***	-0.305	**0.002**
	Carbohydrate, g	-0.130	0.200	-0.147	0.145	-0.009	0.931	-0.032	0.755	-0.100	0.326
	Carbohydrate (TE), %	0.040	0.693	0.047	0.639	0.110	0.279	0.169	0.093	0.075	0.461
	Protein, g	-0.274	**0.006***	-0.234	**0.019***	-0.225	**0.025***	-0.229	**0.022***	-0.261	**0.010***
	Protein (TE) %	-0.092	0.367	-0.006	0.949	-0.124	0.220	-0.063	0.531	-0.073	0.475
	Fat, g	-0.197	**0.049***	-0.265	**0.008***	-0.176	0.081	-0.273	**0.006***	-0.235	**0.020***
	Fat (TE), %	0.016	0.875	-0.029	0.774	-0.038	0.710	-0.117	0.245	-0.033	0.746

*p<0.05; Correlation analysis; Non-parametric Spearman correlation coefficient was used because the assumption of normality could not be provided.

Regardless of the type of sport they compete in, the media focus is often on the appearance of women athletes rather than their performance; they are sexually objectified (35). Sportswomen may suffer from internal conflict as a result of making comparisons between idealized body images and their own bodies. For example, a muscular appearance may not be seen as appropriate for women. This causes body dissatisfaction and deterioration of body image perception (36).

Valliant et al. (37) reported that dietary carbohydrate intake was low in female volleyball players, football players, athletes, and swimmers, replaced with high-fat foods. There is some evidence that high-fat diets may adversely affect athletic performance (37). In this study, it was observed that the volleyball players had higher dietary protein and carbohydrate intake on training days compared to non-training days, with fat intake higher on non-training days ($p<0.05$). This might have been because the participants preferred the food prepared by a dietitian or recommended by the trainers on training days, resulting in higher energy and

nutrient intakes. Inadequate nutritional knowledge, long training times, and limited access to food in sportspeople may lead to inadequate intake of vitamins and minerals (38).

As the media pressures (a sub-dimension of the SATAQ-3) increased, participants found their bodies less attractive ($p<0.05$). As they tried more to emulate media figures, their perception of their "body attractiveness" and the "perception of sports competence" decreased. Similarly, they compared their bodies to media figures more, they found their bodies less attractive ($p<0.05$). Aldan (39) examined the effects of body image and related variables (family influence, media influence, eating habits) on university students and reported that increased family, peer, and media effect on female students led to increasingly restrictive eating behavior, low body dissatisfaction, and negative body image. Participants who participated in sports felt the effect of the media more than those who did not. It is thought that the ideal body image perception created by the media effect is associated with positive characteristics such as success and attractiveness.

In another study by Avan (40), conducted on individuals aged 18-30 attending a private sports center, males had higher body dissatisfaction scores with respect to their body parts than women. No relationship was found between participants' scores from the SATAQ-3and the subscales of the satisfaction with body parts and features scale ($p>0.05$).

Among elite sportspeople, it was determined that the rate of eating behavior disorders was 22.0% in sportswomen and 4.0% in sportsmen (1). Although in the last two decades the male body has also started to become more visible in popular culture, the female body has always been featured more in the media than the male body (41). In our study, we determined that the energy (kcal), protein (g) and fat (g) intake of the volleyball players on non-training days decreased significantly as the use of the media as an informational source and media pressures increased ($p<0.05$). As the participants tried to appear similar to media figures more, they consumed statistically significantly less energy (kcal) and protein (g) on non-training days ($p<0.05$). It was determined that as the total scores of the participants from the SATAQ-3 increased, they consumed less dietary energy (kcal), protein (g), and fat (g) ($p<0.05$).

The effects of media image on women's body satisfaction and eating behaviors were examined in Hong Kong and Shanghai. In the study, it was determined that eating behaviors and body image were affected in women watching videos showing thin and ideal body images (42). Media effects, body image, and body dissatisfaction may be a risk factor for eating disorders.

As the waist-hip ratio of female volleyball players increased, self-reported sports competence, which is one of the subscales of PSPP, increased, and the body attractiveness decreased ($p<0.05$). Gökensel (43) tried to identify the emotional, external, and restrictive eating behaviors of sportspeople by using their scores from the Dutch Eating Behavior Questionnaire (DEBQ). It was observed that as the scores of the participants from the overall DEBQ increased, their waist and hip values increased, as well. With the increase in DEBQ scores, restrictive eating behaviors were observed in the participants.

The present study has some limitations. Generalizations beyond our study population should be made only with caution. Comparisons could be made neither to a control group nor to male players.

In conclusion, media image is an important risk factor for female volleyball players in terms of increased body dissatisfaction, deterioration of body image, and negative body image. Media can play either a protective role against the development of eating disorders in female volleyball players, or lead to an increase in body dissatisfaction and deterioration in body image in sportswomen from the adolescence period. Appropriate use of body image by the media would be a major factor in determining which predominates.

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