

**RESEARCH ARTICLE**

# Assessing body dissatisfaction in Japanese women during the second trimester of pregnancy using a new figure rating scale

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**Funding information**

Fumiko Yamaji Nursing Research Fund and Grants-in-Aid for Young Scientist B (17K17469).

**Abstract**

During pregnancy, women re-evaluate their body image based on their increasing body weight. They are usually concerned about their body size, which leads to body dissatisfaction. In this study, we investigated body dissatisfaction among Japanese women during the second trimester, when they are recommended to gain adequate weight. A cross-sectional survey of body dissatisfaction among pregnant women was conducted using a new figure rating scale corresponding to body mass index with real-life photographs of women in their sixth month of gestation. Pregnant Japanese women expressed body dissatisfaction and preferred to be thinner by 1.6 kg/m<sup>2</sup> of their body mass index. They perceived their body size as larger than their real size, and those with a higher body mass index had more body dissatisfaction, although they were of normal weight or underweight. The results indicated that the new figure rating scale could be a useful tool to identify pregnant women with higher body dissatisfaction during the second trimester, providing an opportunity to discuss adequate gestational weight gain with pregnant women.

**KEYWORDS**

body dissatisfaction, body image, gestational weight gain, Japanese women, pregnancy, pregnancy trimesters

## 1 | INTRODUCTION

Body image is an individual's self-perception of his or her appearance (Cash, 2004). A negative body image is often called body dissatisfaction, "a person's negative thoughts and feelings about his or her body" (Grogan, 2008, pp. 4). Pregnant women experience increasing body weight and a changing figure over a relatively brief period, and therefore, their body dissatisfaction can vary throughout gestation. Some studies have revealed a positive body image among pregnant women, while some others have revealed a negative body image (Meireles, Neves, de Carvalho, & Ferreira, 2015). Body dissatisfaction during pregnancy is related not only to psychological health, for example, depressed mood, weight concerns, and maternal fetal attachment, but also to maternal behaviors, such as exercise and weight management (Fuller-Tyszkiewicz, Skouteris, Watson, & Hill, 2013). Body dissatisfaction tends to be associated with unhealthy eating behaviors and failure of weight management (Fuller-Tyszkiewicz et al., 2013; Meireles et al., 2015).

### 1.1 | Literature review

Results of previous studies have been inconsistent regarding body dissatisfaction during pregnancy. Comparing pregnant and non-pregnant women using a modified version of the Body Shape Satisfaction Scale revealed higher body satisfaction among pregnant women (Loth, Bauer, Wall, Berge, & Neumark-Sztainer, 2011). A cohort study was conducted to examine body dissatisfaction during pregnancy using the Body Attitudes Questionnaire and the Pregnancy Counter Rating Scale, which consists of ratings for bust, stomach, and buttocks (Skouteris, Carr, Wertheim, Paxton, & Duncombe, 2005). Results revealed lower body satisfaction during pregnancy than before pregnancy. These inconsistencies could be because previous studies investigated different aspects of body dissatisfaction (Thompson, 2004). Pregnant women have ambivalent feelings toward their body (Hodgkinson, Smith, & Wittkowski, 2014). Weight gain is their common complaint, even though they know it is important for fetal

growth (Clark, Skouteris, Wertheim, Paxton, & Milgrom, 2009). Pregnant women not only gain body weight but also undergo a change in their figure. Changes in the size and shape of their abdomen and breasts might affect their body image (Watson, Fuller-Tyszkiewicz, Broadbent, & Skouteris, 2015). Most previous studies have used tools primarily developed for the non-pregnant population to assess body dissatisfaction during pregnancy (Meireles et al., 2015), thus it is necessary to use instruments developed exclusively for pregnant women.

Among Japanese women, 90.5 and 85.7% of those in their 20s and 30s are underweight or normal weight, respectively (Ministry of Health, Labour and Welfare, 2018). To control one's appetite strictly and eat a restricted diet is a distinctive feature among non-pregnant women (Miller, 2006), which has resulted in a growing trend of underweight young women (Sugawara, Saito, Sato, Kodama, & Sone, 2009). Japanese women tend to perceive themselves as overweight or obese, even though their body mass index (BMI) is underweight or within the normal range (Hayashi, Takimoto, Yoshita, & Yoshiike, 2006; Inoue et al., 2007). The psychology of pregnant women is affected by the culture of their surroundings (Takegata et al., 2018). Watson et al. (2015) suggested that pregnant Japanese women have different views regarding their experiences and expectations toward their body when compared with Anglo-Saxon women; pregnant Japanese women tried to achieve minimal gestational weight gain rather than appropriate weight gain.

Appropriate weight gain based on women's pre-pregnancy BMI category was set to optimize maternal and fetus health outcomes (Healthy Parents and Children 21 Committee, 2006). The recommendation of gestational weight gain in Japan is from 9 to 12 kg for underweight and from 7 to 12 kg for normal weight (Healthy Parents and Children 21 Committee, 2006). Body dissatisfaction and restricting weight gain are matters of concern, because they can lead to serious health problems for both the fetus and the mother; birthweight declines and the proportion of low birthweight infants is almost 10% in Japan (Gluckman, Seng, Fukuoka, Beedle, & Hanson, 2007). Moreover, pregnant women's obsession to have a perfect body could cause body dysmorphic disorder (Vashi, 2016).

A figure rating scale (FRS) is one of the common measures used to quantitatively assess body image related to body size (Grogan, 2008). When using an FRS, a person chooses a perceived figure and an ideal figure from a series of thin to fat figures. The difference between the perceived and the ideal figure is considered the degree of body dissatisfaction. The direction of body dissatisfaction, that is, their desire to gain weight or reduce weight, can also be identified. Stunkard, Sorensen, and Schulsinger (1983) developed the most popular FRS for men and women, and subsequently, other researchers developed FRS for specific groups, for example, children (Collins, 1991), adolescent females (Sherman, Iacono, & Donnelly, 1995), and obese persons (Williamson et al., 2000). Recently, FRS that reflect reality have been developed using digital photographs rather than hand-drawn images (Harris, Bradlyn, Coffman, Gunel, & Cottrell, 2008; Swami, Salem, Furnham, & Tovée, 2008).

## 1.2 | Study aim

The aim of this study was to investigate the degree and direction of body dissatisfaction among pregnant Japanese women during the

second trimester using a new FRS for the sixth month of gestation that reflects their real appearance. Body dissatisfaction during the sixth month was measured because gestational weight gain during the second trimester is the most essential factor to prevent small-for-gestational-age infants (Sridhar, Xu, & Hedderson, 2016), and gestational weight gain mostly occurs during the second and third trimesters (Healthy Parents and Children 21 Committee, 2006). Midwives and nurses can discuss how women could optimize their own and their babies' health during this period.

## 2 | METHODS

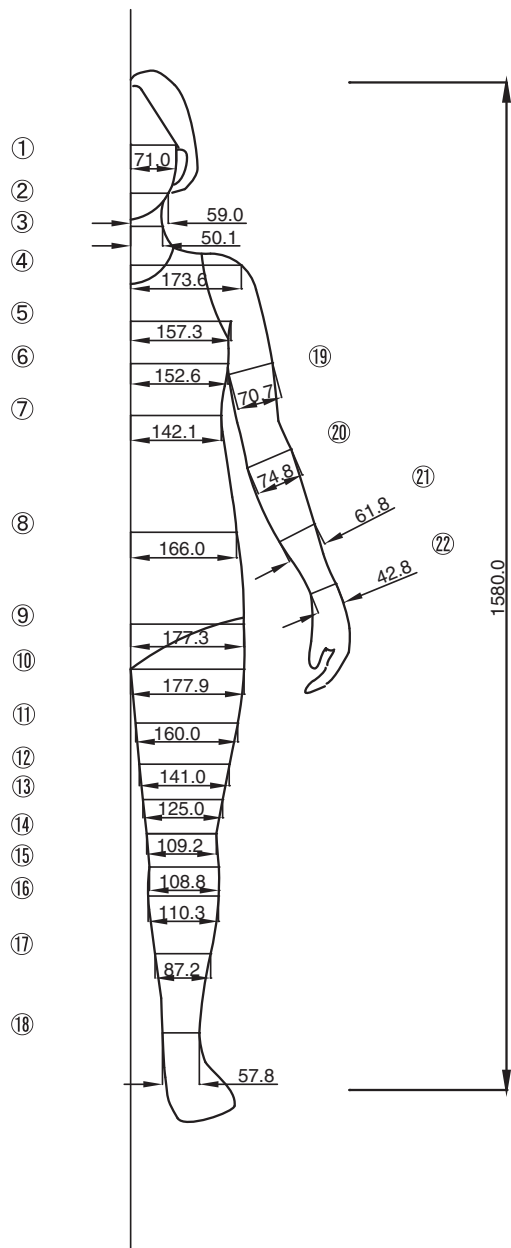
### 2.1 | Figure rating scale for women in the sixth month of gestation

Women in the sixth month (between 20 and 23 weeks) of gestation attending a swimming school were recruited from June 2013 to August 2014 in Osaka, Japan. This swimming school accepted only healthy pregnant women, with permission from the obstetrician in charge, and offered 1 h swimming sessions. The inclusion criterion for this study was healthy, singleton pregnant women without any complications. Participants received an oral and written explanation of the study and provided signed consent forms. The study was approved by the research ethics committee of Health Sciences, Osaka University Graduate School of Medicine (no. 255).

The pregnant women's health conditions were examined by a midwife working for the swimming school before every session. After the health check, the 16 women in their sixth month of gestation were photographed wearing their swimsuits without shoes and socks. A digital still camera, which could produce a 12 100 000-pixel image, was fixed in front of participants. A researcher measured their height using the Seca 213 stadiometer and their weight by the WB-260A digital scale. BMI was formulated as weight (kg) divided by the square of height (m).

The background data of the 16 participants indicated that all participants were at their sixth month of gestation and the mean period was 22.2 (standard deviation [SD] 1.4) weeks. Their mean age was 33.0 (SD 4.3), and 14 participants were primiparas. Three were underweight (<18.5 kg/m<sup>2</sup> BMI), 12 were normal, and one was overweight (>25 kg/m<sup>2</sup> BMI) before pregnancy. Their height (159.2 cm, SD 6.0) and weight before pregnancy (52 kg, SD 5.0) were almost that of the average Japanese woman: 158.8 cm and 52.8 kg for women in their 20s, and 158.1 cm and 53.6 kg for those in their 30s (Ministry of Health, Labour and Welfare, 2018). The mean calculated BMI was 21.6 (SD 2.3).

The digital photographs were counted for the lengths of pixels at 22 reference body points using Adobe Photoshop CS6. The 22 reference points are shown in Figure 1. After standardizing their height to 158 cm, which is the mean height of Japanese women in their 20s and 30s (Ministry of Health, Labour and Welfare, 2018), 22 linear regression equations predicted the lengths of the reference body points from their BMI. Regression coefficients at 17 of the 22 reference points were significantly positive at the 5% significance level (Table 1). Subsequently, a draftsman drew nine figures of bodies with



**FIGURE 1** Drawing of figure with 26 body mass indexes based on the lengths of 22 reference points

BMI ranging from 18 to 34 based on the predicted lengths of the 22 reference body points using AutoCAD 2010. Figure lines were drawn smoothly, removing awkwardness. The accuracy of the figures was at the .1 mm level. The left side of the figure was first drawn, and

it was then combined with the right side, which was an inversion of the left side. A representative sample of the drawing of a figure with a BMI of 26 kg/m<sup>2</sup> is shown in Figure 1, and Figure 2 shows the picture of the FRS in the sixth month of gestation, ranging from 18 to 34 kg/m<sup>2</sup> BMI. In addition to the process, midwives and obstetricians discussed the content validity of the FRS.

## 2.2 | Analysis of body dissatisfaction of women in the sixth month of gestation

### 2.2.1 | Participants and methods

A cross-sectional questionnaire study was conducted using the original FRS for women in the sixth month of gestation. Participants were invited to take part in the study at a primary obstetric clinic, which is close to the swimming school, in an academic and educational setting in Osaka, Japan. The study was conducted from October 2014 to March 2015. The participants answered a self-administered questionnaire and sent it by mail to the researcher, along with their signed consent form. They were asked about their backgrounds, anthropometrics (height, pre-pregnancy weight, and weight in the sixth month of gestation), and body image using the FRS, their perceived body size, and the ideal body size they wanted to achieve. The FRS was printed on a sheet of paper, and pregnant women chose a figure that most reflected how they think they look (perceived body size) and a figure that most reflected how they want to be (ideal body size). The wordings for questions on perceived body size and body dissatisfaction were the same as that used in the National Health and Nutrition Survey (Ministry of Health, Labour and Welfare, 2004). To express their perception, participants were asked to choose one from the answers to the question, “Do you think you are overweight or underweight?”: (i) overweight; (ii) slightly overweight; (iii) average; (iv) slightly underweight; or (v) underweight. To express body dissatisfaction, participants were asked to choose one from the answers to: “Do you want to gain weight or lose weight?”: (i) gain weight; (ii) slightly gain weight; (iii) maintain weight; (iv) slightly lose weight; or (v) lose weight.

This study was approved by the research ethics committees of Health Sciences, Osaka University Graduate School of Medicine (no. 301).

### 2.2.2 | Data analysis

First, participants' background and anthropometric data were summarized calculating the mean and SD, and the number and proportion.

**TABLE 1** Results of 22 linear regression equations to predict the lengths of reference body points from body mass index

Reference points (N)	1	2	3	4	5	6	7	8	9	10	11
Coefficient	.121	.042	.099	.040	.451	.461	.394	.676	.476	.602	.328
Adjusted R <sup>2</sup>	.125	-.049	.280	-.061	.486	.416	.263	.417	.588	.618	.698
P-value	.098	.589	.025	.715	.002	.004	.024	.004	<.001	<.001	<.001
Reference points (N)	12	13	14	15	16	17	18	19	20	21	22
Coefficient	.411	.350	.242	.318	.243	.194	.120	.116	.119	.110	.059
Adjusted R <sup>2</sup>	.785	.744	.638	.680	.752	.431	.359	.149	.135	.298	.216
P-value	<.001	<.001	<.001	<.001	<.001	.006	.008	.077	.089	.021	.046

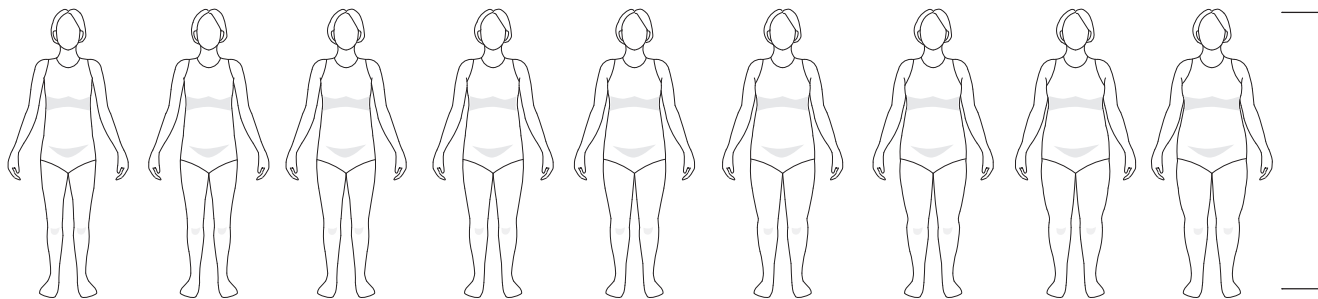


Figure number

1                      2                      3                      4                      5                      6                      7                      8                      9

Corresponding BMI

18                      20                      22                      24                      26                      28                      30                      32                      34

**FIGURE 2** Figure rating scale (FRS) in the sixth month of gestation

BMI was calculated from their self-reported height and weight. BMI in the sixth month was divided into three categories (underweight, normal, and overweight) using the standard BMI in the sixth month of gestation provided by the Japan Society of Obstetrics and Gynecology Nutrition Committee (1998). Recently, BMI before pregnancy has become the standard for gestational weight management (Healthy Parents and Children 21 Committee, 2006), so this is the latest standard for each gestational month in Japan.

Second, the degree of body dissatisfaction was investigated through descriptive statistics for perceived body size, ideal body size, and body dissatisfaction using the FRS. Body dissatisfaction is defined as the difference between perceived body size and ideal body size. A larger difference between the two body sizes is considered to indicate higher body dissatisfaction. When a participant's perceived body size was larger than the ideal body size, she wanted to become thinner, clearly demonstrating the direction of dissatisfaction. Next, Pearson's  $r$  was calculated to examine the relationship between participants' BMI and their perceived body size using the FRS.

Third, the relationship between participants' BMI and their perceived body size, as well as body dissatisfaction, were examined from their questionnaire responses to calculate the kappa coefficient and verify the FRS results.

Finally, the relationship between the degree of body dissatisfaction and other variables was investigated to estimate the population with higher body dissatisfaction calculating Pearson's  $r$ .

All statistical calculations were done using SPSS version 24. The significance value was set at 5%.

### 3 | RESULTS

#### 3.1 | Participants' characteristics

In total, 406 women in their sixth month of gestation were invited to the study, and 161 (39.7%) agreed to participate. There were no missing data regarding the body image questions, and the data of all 161 women were analyzed. The background and anthropometric characteristics of participants are shown in Table 2. The anthropometric data were similar to that of previous research, as described in the Methods.

#### 3.2 | Body dissatisfaction among pregnant Japanese women

The body image results using the FRS are shown in Table 3. The average perceived body size was 24.9 kg/m<sup>2</sup> BMI (SD 2.81), which was larger than their average ideal body size of 23.3 kg/m<sup>2</sup> BMI (SD 2.54). Body dissatisfaction, which was determined by subtracting ideal body

**TABLE 2** Background and anthropometrics of participants (n = 161)

	Mean	SD	N	%
Age (years)	33.2	3.68		
Period of gestation (weeks)	22.0	1.56		
Para	.67	.76		
Primiparas			77	47.8
Marital status <sup>a</sup>	—	—		
Single			3	1.9
Married			156	97.5
Divorced			1	.6
Educational level <sup>a</sup>	—	—		
High school			16	9.9
Vocational school			23	14.3
Junior college			30	18.6
University			79	49.1
Graduate school			12	7.5
Household income (yen) <sup>a</sup>	—	—		
<2 million (18000 USD)			0	0
2-6 million (18000-54000 USD)			50	31.3
>6 million (54000 USD)			107	66.5
Unknown			3	1.9
Self-reported height (cm)	159.6	5.53		
Self-reported weight before pregnancy (kg)	50.5	6.50		
BMI before pregnancy	19.8	2.12		
Weight at sixth month (kg)	54.0	6.55		
BMI at sixth month (kg/m <sup>2</sup> )	21.2	2.18		
Underweight (<20.0 kg/m <sup>2</sup> )			48	29.8
Normal (20.0–25.5 kg/m <sup>2</sup> )			108	67.1
Overweight (>25.5 kg/m <sup>2</sup> )			5	3.1

BMI = body mass index; SD = standard deviation.

<sup>a</sup>n = 160 because of missing data.

**TABLE 3** Body image using the figure rating scale (FRS)

	Mean BMI (kg/m <sup>2</sup> )	SD
Perceived body size using FRS	24.9	2.81
Ideal body size using FRS	23.3	2.54
Body dissatisfaction <sup>a</sup> using FRS	1.6	2.12

<sup>a</sup>Body dissatisfaction was determined by subtracting ideal body size from perceived body size.

BMI = body mass index; SD = standard deviation.

size from perceived body size, was 1.6 kg/m<sup>2</sup> BMI (SD 2.12), suggesting their desire to become thin.

The correlation between BMI and perceived body size using the FRS is shown in Figure 3. As illustrated, all figures in the FRS, except 34 kg/m<sup>2</sup> BMI, were chosen by some respondents, and there was a strong positive correlation between BMI and perceived body size ( $r = .668, P < .001$ ). However, 151 (93.8%) of the 161 participants overestimated their body size, regardless of their BMI.

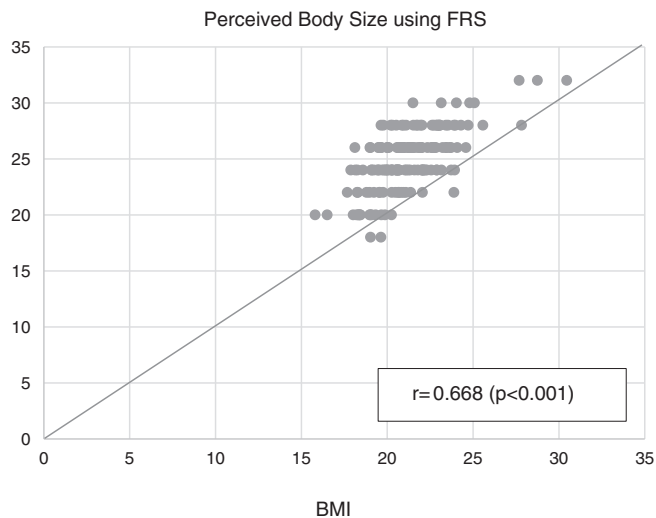
The relationship between BMI and participants' perceived body size and body dissatisfaction, using their questionnaire responses, is shown in Table 4. The results also showed participants' overestimation of their weight status and their body dissatisfaction to maintain or reduce their weight.

### 3.3 | Relationship between body dissatisfaction and other variables

The correlation between body dissatisfaction and other variables is shown in Table 5. BMI before pregnancy and in the sixth month were significantly correlated to body dissatisfaction ( $r = .498, P < .001$  and  $r = .567, P < .001$ , respectively), which showed that pregnant women with higher BMI tend to have higher body dissatisfaction.

## 4 | DISCUSSION

In this study, we investigated body dissatisfaction among pregnant Japanese women. The main finding was that women during the



**FIGURE 3** Correlation between body mass index and perceived body size using the figure rating scale (FRS) in the sixth month of gestation

**TABLE 4** Relationship between BMI and weight perception/body dissatisfaction from participants' responses to the questionnaire in the sixth month of gestation

Category BMI (kg/m <sup>2</sup> )	Underweight <20.0	Normal 20.0–25.5	Overweight >25.5
<b>Weight perception</b>			
Underweight	5	0	0
Slightly underweight	7	1	0
Normal	21	48	0
Slightly overweight	13	41	0
Overweight	2	18	5
<b>Body dissatisfaction</b>			
To gain weight	1	0	0
To slightly gain weight	4	2	0
To maintain weight	37	64	2
To slightly lose weight	4	31	0
To lose weight	2	11	3
<b>Total</b>	<b>48 (29.8%)</b>	<b>108 (67.1%)</b>	<b>5 (3.1%)</b>

$\kappa = .024, P = .507$  for weight perception and  $\kappa = .016, P = .131$  for body dissatisfaction, respectively.

BMI = body mass index.

second trimester were dissatisfied with their body size and wanted to be thin.

This study is unique in that it uses an original FRS for women in the sixth month of gestation based on photographs of pregnant women. Previous researchers have used or converted FRS developed for non-pregnant women to assess body dissatisfaction in the pregnant population (Skouteris et al., 2005; Sui, Turnbull, & Dodd, 2013). Because pregnancy results in rapid body changes, it might be difficult to use FRS without considering gestational age. This scale is the first FRS especially created for pregnant women to assess their body dissatisfaction. The reference of the FRS was set based on real body appearances; each figure in the scale was created from the estimated lengths of 22 body parts of pregnant women. As shown in Table 1, the lengths of the body parts highly correlated with the BMI, confirming the construct validity. In previous FRS, the reference was set on body image itself, and the validity was tested by comparing body image in the FRS with body image measured by other instruments (Harris et al., 2008; Stunkard et al., 1983). Therefore, using the

**TABLE 5** Correlation between body dissatisfaction assessed by the figure rating scale (FRS) and other variables

	Age	Period of gestation	Para	Educational level
Pearson's r	-.089	.071	.047	-.168
P-value	.260	.372	.553	.034
	Household income <sup>a</sup>	Height	Self-reported BMI before pregnancy	Self-reported BMI at sixth month
Pearson's r	-.082	.025	.498	.567
P value	.305	.752	<.001	<.001

<sup>a</sup>Analyzed without "unknown".

BMI = body mass index.



present scale, body image can be compared with real appearance. The FRS consisted of nine figures ranging from 18 to 34 kg/m<sup>2</sup> BMI, with intervals of 2 kg/m<sup>2</sup>. Such small intervals and a limited range of BMI might be beneficial to examine the body image of Japanese women, as they are mostly underweight or of normal weight, and have a narrow weight range. Respondents could choose a suitable figure, distinguishing a small body size difference (Figure 3). Therefore, the original FRS could provide a more precise assessment of the body image of pregnant Japanese women.

As shown in Figure 3, most respondents overestimated their body size. This overestimation of their body size was also confirmed by the following question: "Do you think you are overweight or underweight?" (Table 4). An overestimation of body size among non-pregnant young Japanese women was previously demonstrated (Hayashi et al., 2006; Inoue et al., 2007), whereas 87% of pregnant women with normal BMI in the USA accurately perceived their pre-pregnant weight status and only 13% overestimated their weight status (Herring et al., 2008). These results suggest that overestimation of body size might be characteristic of Japanese women, regardless of whether they are pregnant or not. Perceiving oneself to be overweight was strongly correlated with attempts to lose weight among the non-pregnant population (Lemon, Rosal, Zapka, Borg, & Andersen, 2009). It has been reported that Japanese women restrict their weight gain, even during pregnancy (Takimoto, Mitsuishi, & Kato, 2011). The overestimation of their body size might be related to the restriction of their gestational weight gain.

Body dissatisfaction among Japanese women during the second trimester was confirmed using the FRS (Table 3), as well as by the question: "Do you want to gain weight or lose weight?" (Table 4). Previous qualitative studies on body dissatisfaction conducted in several countries have provided inconsistent findings. Pregnant Australian women had a positive attitude toward their pregnant body stating, "I am pregnant, not fat" (Clark et al., 2009). However, pregnant Taiwanese women had body dissatisfaction regarding their overall appearance and considered that they lost their beauty when they became pregnant (Chang, Chao, & Kenney, 2006). Smith and Joiner (2008) showed that the ideal body of non-pregnant Japanese women was thinner than that of US women. These results suggest that East Asian women generally desire having a thinner body than Caucasian women, and they are likely to have body dissatisfaction, even during pregnancy.

The degree of body dissatisfaction among Japanese women in the sixth month of gestation was 1.6 kg/m<sup>2</sup> BMI on average (Table 3), and body dissatisfaction proportionally increased with their BMI (Table 5). The obese population is more likely to be afflicted by body dissatisfaction than the normal weight population (Weinberger, Kersting, Riedel-Heller, & Luck-Sikorski, 2016). Although most of the pregnant Japanese women were underweight or normal weight, they had body dissatisfaction along with BMI increase. Haruna et al. (2010) reported that concern about gestational weight gain among Japanese women was so strong that they tried to minimize weight gain throughout pregnancy. Additionally, over 60% of Japanese women who were underweight or of normal weight before pregnancy gained insufficient weight during pregnancy (Tanaka et al., 2014). Higher body dissatisfaction was considered to lead to undesirable weight gain during

pregnancy (Sui et al., 2013). As psychological interventions are useful to determine maternal behaviors for gestational weight gain (Hill et al., 2013), measuring body dissatisfaction during pregnancy could be important to identify high-risk women for insufficient gestational weight gain. The FRS consists of nine forward-facing figures, because the abdomen is emphasized in side-facing figures. Pregnant women experience various emotions regarding their growing abdomen, and thus it might be difficult to accurately evaluate their body size-related image using side-facing figures. The forward-facing FRS can help identify those with greater body size-related dissatisfaction in the sixth month of pregnancy when most women do not feel morning sickness and begin to show interest in weight management. Insufficient weight gain of Japanese women during pregnancy is correlated to small-for-gestational-age infants (Harita et al., 2012; Tanaka et al., 2014). Body dissatisfaction could be a key to psychological intervention to decrease the number of small-for-gestational-age infants consequently.

#### 4.1 | Implications for nursing practice

Using the original FRS for Japanese women in the sixth month of gestation, midwives and nurses can identify pregnant women with body dissatisfaction and measure their degree of body dissatisfaction. The sixth month of gestation is when women are recommended to adequately increase their weight. Pregnant Japanese women might be supported to correct their overestimated body perception and decrease their body dissatisfaction, which is known to be related to restricted weight gain during pregnancy. Effective weight management interventions should focus on lifestyle modifications, such as a healthy diet and engaging in physical activity, rather than the weight itself (Johnson et al., 2013). If they have a realistic body perception, women could be motivated to adopt healthier behaviors during pregnancy.

#### 4.2 | Limitations

This study also has a few limitations. First, no obese women with 30 kg/m<sup>2</sup> or more BMI were selected to participate in the study to create the FRS, and thus lengths of the body parts for figures with larger BMI were predicted. However, considering that there are very few obese women among Japanese, this limitation would have little effect on the results. Second, the concurrent validity was not tested. However, the creating process secured the content and the construct validity for the FRS. A test-retest reliability of the FRS was not examined because of the rapid body changes during pregnancy. Further testing on the FRS is warranted. Third, self-reported weight was used to calculate BMI because the questionnaire response deadline was within 2 weeks. Before responding to the questionnaire, participants measured their weight at an antenatal health clinic, and Pearson's *r* between self-reported and medically recorded weights was .996 (<.001). The difference between measured and reported weight was assumed to be small. Finally, this was a descriptive study, thus it cannot explain the causal relationship between body dissatisfaction and BMI. The response rate for this study was low at 39.7%, which can

give rise to response bias; there could also be different characteristics among non-responders.

## 5 | CONCLUSION

Japanese women in the sixth month of gestation showed body dissatisfaction and aimed to become thin. Pregnant women with a higher BMI tended to have higher body dissatisfaction. This study also suggested the existence of body size overestimation among pregnant women. This FRS can be used to identify pregnant women with body dissatisfaction and to measure the degree of body dissatisfaction. Women are recommended to gain adequate weight during their sixth month of gestation. Therefore, pregnant Japanese women need to have an accurate body perception and decrease their body dissatisfaction. Having an accurate body perception could motivate them to adopt healthier behaviors during pregnancy. Further research is required to investigate the relationship between body dissatisfaction and weight management behavior or perinatal outcomes.

## ACKNOWLEDGMENT

The authors are grateful to the pregnant women who participated in the study.

## AUTHOR CONTRIBUTIONS

Study design: S.T. and K.O.

Data collection: S.T. and M.Y.

Data analysis: S.T. and K.O.

Manuscript writing and revisions for important intellectual content: S.T. and K.O.

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**How to cite this article:** Tsuchiya S, Yasui M, Ohashi K. Assessing body dissatisfaction in Japanese women during the second trimester of pregnancy using a new figure rating scale. *Nurs Health Sci*. 2019;21:367–374. <https://doi.org/10.1111/nhs.12608>