

Longitudinal analysis of body dissatisfaction: the desire to be thinner among women in Japan during low-risk pregnancies

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ABSTRACT

Body dissatisfaction during pregnancy can significantly impact maternal and child health. Therefore, this longitudinal study investigated changes in body dissatisfaction using two figure rating scales developed from photographic digital data of Japanese pregnant women during the sixth and tenth months of pregnancy. Study participants were recruited at their sixth month prenatal visit at a primary maternity clinic in Japan from October 2014 to March 2015. Body dissatisfaction was estimated based on the perceived and ideal body sizes of 135 pregnant women, expressed as body mass index. Data were collected using self-administered questionnaires. The study found that body dissatisfaction in the tenth month was significantly higher than that in the sixth month. Among the participants, 75 (55.6%) and 79 (58.5%) experienced body dissatisfaction, desiring to be thinner (where perceived body size exceeded ideal body size) during the sixth and tenth months of pregnancy, respectively. Pregnant women who had body dissatisfaction and a desire to be thinner in the sixth month tended to experience an increase in body dissatisfaction by the tenth month compared to those without body dissatisfaction in the sixth month. During the sixth and tenth months, women with body dissatisfaction showed significantly larger perceived body sizes than those without body dissatisfaction. These results indicated that the use of a figure rating scale at the sixth month of pregnancy may help identify women with body dissatisfaction; moreover, perceived body size might be a key factor in preventing an increase in body dissatisfaction from the second to third trimesters.

Keywords: body dissatisfaction, body image, figure rating scale, Japan, pregnancy

Abbreviations:

BMI: body mass index

SD: standard deviation

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INTRODUCTION

Body dissatisfaction is defined as “a person’s negative thoughts and feelings about his or her body”.¹ During pregnancy, body dissatisfaction significantly affects both maternal and child health.² From the maternal perspective, body dissatisfaction has been linked to gestational weight gain,³ postpartum weight retention,³ problematic dietary behaviors,⁴ as well as anxiety and depression during pregnancy⁵ and the postpartum period.⁶ Maternal body dissatisfaction can also affect mothers’ breastfeeding practices⁷ and feeding styles.⁸ Within these relationships, maternal body dissatisfaction has been conceptualized as a pivotal influencing factor for child attachment and the risk of child obesity.⁹ Consequently, acquiring a comprehensive understanding of body dissatisfaction during pregnancy is valuable for optimizing mothers’ and children’s health and well-being.

Efforts have been made to examine levels of body dissatisfaction during pregnancy. One review concluded that pregnant women tend to experience lower levels of body dissatisfaction compared with non-pregnant women despite the increase in body size.¹⁰ However, a qualitative meta-synthesis revealed that pregnant women tried to safeguard their body satisfaction by challenging the socially constructed ideal of thinness—even though they grappled with conflicting emotions between wanting to appear attractive as women and embracing their role as mothers during the second and third trimesters.¹¹ Furthermore, the progressive increase in body weight throughout pregnancy significantly impacts body dissatisfaction.¹² Therefore, delving into the exploration of body dissatisfaction in the second and third trimesters is warranted.

Culture is widely acknowledged as a significant influencer of body dissatisfaction. However, recent studies suggest a decrease in cultural discrepancies in body dissatisfaction owing to the global proliferation of the Western ideal of slimness.¹ In a worldwide cross-cultural study, women in East Asia did not show significant differences in body dissatisfaction compared with those in Southeast Asia, Oceania, Western Europe, Eastern Europe, Scandinavia, Africa, North America, and South America.¹³ Conversely, distinctive cultural variations in body dissatisfaction are evident even within East Asian countries.¹⁴ Consequently, culture-specific studies on body dissatisfaction have been conducted in East Asia. For instance, a South Korean study revealed that the drive for thinness increased body dissatisfaction among women.¹⁵ Another Chinese study reported that women who received frequent body-related comments showed a strong inclination toward weight loss motivation and the adoption of unhealthy weight control behaviors.¹⁶ Overall, it appears that East Asian women encounter body dissatisfaction and aspire to a slimmer physique.

Specific to Japan, studies have demonstrated the prevalence of a thin ideal and misperception of body size among women. An analysis of national data revealed that Japanese women tended to overestimate their body size, often perceiving themselves as overweight or obese even when they were actually underweight or of normal weight.¹⁷ Furthermore, a recent study examining women in mid-pregnancy reported the presence of the thin ideal as well as body dissatisfaction during the sixth month of pregnancy among Japanese participants.¹⁸ While the tendency to overestimate body size and its associated concerns may persist throughout pregnancy among Japanese women, there remains a lack of comprehensive understanding concerning body dissatisfaction within this specific population.

Given the specific nature of body dissatisfaction among Japanese women, it is crucial to investigate their tendencies to overestimate body size and their adherence to the thin ideal. Figure rating scales serve as a traditional and visually effective method for this purpose.¹⁹ These rating scales consist of figures spanning from very thin to very fat, allowing for the acquisition of quantitative measurements regarding the extent and direction of body dissatisfaction. Participants select figures representing their perceived and ideal body sizes from the series in these scales.

The disparity between the perceived and ideal figures indicates the degree of body dissatisfaction, while the two figure choices signify the direction the individual aims to move, whether toward becoming thinner or fatter. Owing to these attributes, figure rating scales can facilitate the quantitative assessment of body dissatisfaction and body perception among pregnant Japanese women. We had previously developed a figure rating scale for the sixth month of pregnancy.¹⁸ The figure rating scale was created using actual photographs of women in their sixth month of pregnancy, and each figure in the scale visually represents a different body mass index (BMI). This allowed us to establish a correlation between the degree of body dissatisfaction and BMI.

Body dissatisfaction can change depending on the period of pregnancy. In this study, we devised a figure rating scale to evaluate body dissatisfaction during the 10th month of pregnancy. Subsequently, we employed this scale to investigate alterations in body dissatisfaction from the 6th to 10th months of pregnancy among Japanese participants.

MATERIALS AND METHODS

Design

This study employed a prospective longitudinal design.

Participants

We conveniently sampled women in their sixth month of pregnancy from a primary maternity clinic that caters exclusively to low-risk pregnant women. The maternity clinic is situated in a cultural and educational area in Osaka, Japan. Pregnant women were provided with information about appropriate gestational weight gain, and they collaborated with their midwives to establish their personal gestational weight gain goals within the range of Japanese recommendations at the clinic.

The inclusion criteria were women who: 1) were in the sixth month (20–23 weeks) of pregnancy, 2) were aged 20 or older, 3) could read Japanese, and 4) planned to give birth at the clinic. Participants were followed up prospectively until the 10th month (36–39 weeks) of pregnancy. We excluded participants who did not return questionnaires at the 6th or 10th month and cases with unknown home addresses from the analysis.

Data collection

Recruitment took place from October 2014–March 2015. All eligible pregnant women were recruited during their sixth-month prenatal visit and were given the first questionnaire. Those who agreed to participate in the study completed and returned the questionnaire within one week, providing their home addresses for the 10th month survey. The 10th month questionnaire was sent to them when they reached their 36th week of gestation, and participants completed and returned the questionnaire within one week—the follow-up data collection for the 10th month extended until August 2015.

The self-administered questionnaire included sections for background information, anthropometric data, and figure rating scales to assess body dissatisfaction. Background data, such as age, parity, marital status, educational level, and household income, were collected in the sixth month. Information regarding height and pre-pregnancy weight was collected in the sixth month, and participants were asked to provide their current weight in both the 6th and 10th months.

Figure rating scales assess body dissatisfaction

We utilized an existing figure rating scale for women in the sixth month of pregnancy.¹⁸ In

Body dissatisfaction during pregnancy

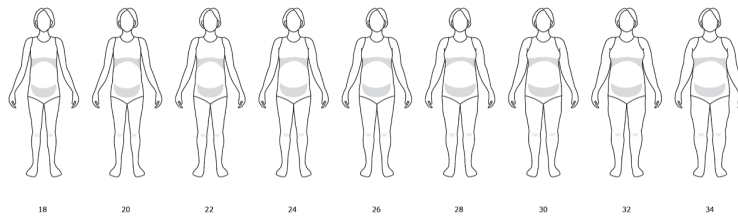


Fig. 1 Figure rating scale for the 10th month of pregnancy and its correspondence with body mass index

this study, we employed the same procedure to develop a figure rating scale for women in the 10th month of pregnancy. The figure rating scale consisted of nine figures corresponding to BMI values ranging from 18 to 34 kg/m² for the 10th month of pregnancy, as depicted in Figure 1. These figure rating scales were created using photographs of pregnant women in their 6th and 10th months and correspond to BMI values for each respective stage of pregnancy.

Participants were instructed to use the figure rating scales to specify their ideal and perceived body sizes during the 6th and 10th months of pregnancy. Body dissatisfaction was calculated by subtracting the ideal body size (expressed as BMI) from the perceived body size (also expressed as BMI). The extent of body dissatisfaction (also expressed as BMI) was subsequently interpreted as the degree of the desire to become thinner. In other words, to examine body size dissatisfaction—specifically, the desire to become thinner, a significant health concern among women in Japan—the presence of body dissatisfaction was defined in this study as perceived body size exceeding the ideal body size. Consequently, ideal body size equaling or exceeding perceived body size was defined as the absence of body dissatisfaction, indicating the absence of a desire to become thinner.

Flow diagram

Figure 2 illustrates the participation flow diagram. Of the initial 406 pregnant women recruited during their sixth month, 161 chose to participate in the study, yielding a participation rate of 39.7%. By the 10th month, 135 of these 161 participants successfully followed up, resulting in a follow-up rate of 83.9%. Importantly, there were no missing data, and the final analysis included all 135 participants.

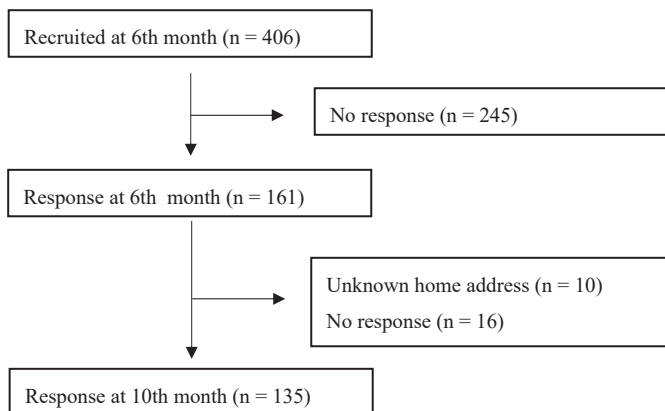


Fig. 2 Flow diagram of participation

Data analysis

Participant characteristics were presented using mean and standard deviation (SD) for continuous variables and frequencies for categorical variables. The BMI standards at the 6th and 10th months of pregnancy were derived from the Japan Society of Obstetrics and Gynecology Nutrition Committee guidelines.²⁰ First, we compared body dissatisfaction between the 6th and 10th months of pregnancy. We also conducted stratified analyses by prepregnant BMI status. Following this, we categorized the participants into two groups based on the presence or absence of body dissatisfaction in the sixth month. We subsequently compared the degree of body dissatisfaction in the 10th month. This analysis was also conducted among prepregnant underweight and normal-weight category participants. To examine the effect of body dissatisfaction in the 6th month on body dissatisfaction during the 10th month, we also conducted a multiple linear regression model adjusted for age and prepregnant BMI status. Additionally, we divided the participants into two groups based on the presence or absence of body dissatisfaction and the desire to be thin at the 6th and 10th months of pregnancy. We compared perceived and ideal body sizes between these groups. To assess the mean level of body dissatisfaction between these groups, we conducted paired t-tests and independent t-tests. All statistical analyses used SPSS Statistics, version 27 (IBM Corp, Armonk, NY, USA). All tests were two-tailed, and statistical significance was considered at $p < 0.05$.

Ethical considerations

This study underwent review by the Research Ethics Committee of Health Sciences, Osaka University Graduate School of Medicine (nos. 255 and 301) and was conducted in compliance with the principles outlined in the Declaration of Helsinki. All participants provided prior written informed consent, and their anonymity was carefully maintained.

RESULTS

Sample characteristics

Table 1 displays the participants' demographic characteristics at the sixth month of pregnancy. The average age was 33.3 years (SD = 3.6), with 46.7% falling within the age range of 30–34 years. Among the participants, 48.9% were primiparous. The mean BMI before pregnancy was 19.9 kg/m² (SD = 2.1), and 97% were categorized as underweight or normal weight. Only 3.0% were classified as overweight, and there were no obese women among the participants.

Table 1 Participants' demographics and anthropometrics at the sixth month of pregnancy (n = 135)

| | n | % |
|---|-----|------|
| Age (years) | | |
| 20–29 | 22 | 16.3 |
| 30–34 | 63 | 46.7 |
| ≥ 35 | 50 | 37.0 |
| Parity | | |
| Primipara | 66 | 48.9 |
| Multipara | 69 | 51.1 |
| Marital status | | |
| Single | 3 | 2.2 |
| Married | 132 | 97.8 |
| Educational level | | |
| High school | 11 | 8.1 |
| Vocational college | 19 | 14.1 |
| Junior college | 25 | 18.5 |
| University | 68 | 50.4 |
| Graduate school | 12 | 8.9 |
| Household income (yen) | | |
| < 2,000,000 | 0 | |
| 2,000,000–6,000,000 | 43 | 31.9 |
| ≥ 6,000,000 | 90 | 66.7 |
| Unknown | 2 | 1.5 |
| BMI before pregnancy (kg/m ²) | | |
| Underweight (< 18.5) | 35 | 25.9 |
| Normal (18.5–24.9) | 96 | 71.1 |
| Overweight (25–29.9) | 4 | 3.0 |
| BMI at 6th month (kg/m ²) | | |
| Underweight (< 20) | 40 | 29.6 |
| Normal (20–25.5) | 90 | 66.7 |
| Overweight (> 25.5) | 5 | 3.7 |

BMI: body mass index

Body dissatisfaction in the 6th and 10th months

The average BMI in the sixth month of pregnancy was 21.27 kg/m² (SD = 2.17). By the 10th month of pregnancy, the mean BMI had increased to 23.15 kg/m² (SD = 2.08). At this point, 45.9% of the participants were classified as underweight (BMI < 22.5 kg/m²), 51.9% fell into the normal weight category, and only 2.2% were categorized as overweight (BMI > 28 kg/m²).

As indicated in Table 2, there were significant increases in anthropometric BMI, perceived body size, and ideal body size from the 6th to the 10th month of pregnancy. The average body dissatisfaction, measured using the figure rating scale, was 1.57 kg/m² (SD = 2.12) in the 6th month and 2.53 kg/m² (SD = 3.37) in the 10th month. We found that body dissatisfaction during the 10th month had significantly increased compared with that during the 6th month of pregnancy. This overall trend was observed in both the underweight and normal-weight prepregnant groups.

Table 2 Body dissatisfaction using figure rating scales at the 6th and 10th months of pregnancy (n = 135)

| All (n = 135) | | | | | |
|---|-------------------------------|------|-------------------------------|------|----------------------|
| | 6th month | | 10th month | | p-value ^a |
| | Mean BMI (kg/m ²) | SD | Mean BMI (kg/m ²) | SD | |
| Anthropometric BMI | 21.27 | 2.17 | 23.15 | 2.08 | < .001 |
| Perceived body size | 25.01 | 2.80 | 27.91 | 3.75 | < .001 |
| Ideal body size | 23.44 | 2.46 | 25.38 | 3.56 | < .001 |
| Body dissatisfaction | 1.57 | 2.12 | 2.53 | 3.37 | < .001 |
| Underweight before pregnancy (n = 35) | | | | | |
| | 6th month | | 10th month | | p-value ^a |
| | Mean BMI (kg/m ²) | SD | Mean BMI (kg/m ²) | SD | |
| Anthropometric BMI | 19.15 | 0.86 | 21.08 | 0.80 | < .001 |
| Perceived body size | 23.14 | 2.67 | 25.83 | 3.67 | < .001 |
| Ideal body size | 22.57 | 2.20 | 24.46 | 3.50 | < .001 |
| Body dissatisfaction | 0.57 | 1.58 | 1.37 | 2.05 | 0.021 |
| Normal weight before pregnancy (n = 96) | | | | | |
| | 6th month | | 10th month | | p-value ^a |
| | Mean BMI (kg/m ²) | SD | Mean BMI (kg/m ²) | SD | |
| Anthropometric BMI | 21.76 | 1.55 | 23.68 | 1.67 | < .001 |
| Perceived body size | 25.46 | 2.37 | 28.48 | 3.48 | < .001 |
| Ideal body size | 23.77 | 2.46 | 25.81 | 3.52 | < .001 |
| Body dissatisfaction | 1.69 | 1.80 | 2.67 | 3.37 | 0.001 |

Body dissatisfaction was calculated as the difference between perceived and ideal body size.

SD: standard deviation

BMI: body mass index

^a Paired t-test.

Comparison of body dissatisfaction in the 10th month by the presence of body dissatisfaction in the 6th month

During the 10th month, women who had previously experienced body dissatisfaction at the 6th month exhibited significantly higher levels of body dissatisfaction compared with those who did not experience body dissatisfaction at the sixth month of pregnancy (Table 3). The presence of body dissatisfaction in the sixth month was influenced by prepregnant BMI status.

The multiple linear regression model indicated a significant association between the presence of body dissatisfaction at the 6th month and body dissatisfaction during the 10th month of pregnancy, adjusted for age and prepregnant BMI status (Table 4).

Table 3 Comparison of body dissatisfaction at 10th month of pregnancy by presence of body dissatisfaction at 6th month of pregnancy

| All (n = 135) | | | |
|---|---------------------------|----------------------------|----------------------|
| | 6th month | | p-value ^a |
| | Absence of BD (n = 60) | Presence of BD (n = 75) | |
| BD at 10th month (kg/m ²) | 0.97 | 3.79 | < .001 |
| Underweight before pregnancy (n = 35) | | | |
| | 6th month | | p-value ^a |
| | Absence of BD (n = 23) | Presence of BD (n = 12) | |
| BD at 10th month (kg/m ²) | 0.96 | 2.17 | 0.086 |
| Normal weight before pregnancy (n = 96) | | | |
| | 6th month | | p-value ^a |
| | Absence of BD (n = 37) | Presence of BD (n = 59) | |
| BD at 10th month (kg/m ²) | 0.97 | 3.73 | < .001 |

Body dissatisfaction was calculated as the difference between perceived and ideal body size.

BD: body dissatisfaction

^a Independent t-test.

Table 4 Results of a multiple linear regression model on body dissatisfaction during the 10th month of pregnancy (n = 135)

| Variables | Beta | SE | t | p-value |
|-----------------------------|--------|-------|--------|---------|
| Age | | | | |
| 30–34 | -1.583 | 0.733 | -2.161 | 0.033 |
| ≥ 35 | -1.127 | 0.741 | -1.520 | 0.131 |
| Prepregnant BMI | | | | |
| Normal (18.5–24.9) | 0.381 | 0.600 | 0.635 | 0.527 |
| Overweight (25–29.9) | 6.020 | 1.596 | 3.772 | < .001 |
| Presence of BD at 6th month | 2.442 | 0.522 | 4.678 | < .001 |

SE: standard error

BMI: body mass index

BD: body dissatisfaction

Comparison of perceived and ideal body size by the presence of body dissatisfaction at the 6th and 10th months

In the sixth month, women experiencing body dissatisfaction (n = 75) had significantly larger perceived body sizes than those without body dissatisfaction. However, the two groups had no significant differences regarding ideal body size (Table 5). By the 10th month, women with body dissatisfaction (n = 79) still had significantly larger perceived body sizes than those without body dissatisfaction, and they also had a significantly thinner ideal body size than those without body dissatisfaction (Table 5).

Table 5 Comparison of perceived and ideal body size by presence of body dissatisfaction at both 6th and 10th months

| | 6th month | | p-value ^a |
|--|---------------|----------------|----------------------|
| | Absence of BD | Presence of BD | |
| | (n = 60) | (n = 75) | |
| Perceived body size (kg/m ²) | 23.57 | 26.16 | < .001 |
| Ideal body size (kg/m ²) | 23.77 | 23.17 | 0.165 |

| | 10th month | | p-value ^a |
|--|---------------|----------------|----------------------|
| | Absence of BD | Presence of BD | |
| | (n = 56) | (n = 79) | |
| Perceived body size (kg/m ²) | 26.25 | 29.09 | < .001 |
| Ideal body size (kg/m ²) | 26.46 | 24.61 | 0.003 |

Body dissatisfaction was calculated as the difference between perceived and ideal body size.

BD: body dissatisfaction

^a Independent t-test.

DISCUSSION

Research on body dissatisfaction during pregnancy has primarily been conducted in the USA, UK, and Australia.¹¹ Previous studies assessed body dissatisfaction among pregnant women using psychological scales developed for the non-pregnant population²¹ or original questions.²² However, researchers have increasingly recognized the need for tools specifically designed to assess body dissatisfaction in pregnant women,²³ leading to the development of a psychological scale for evaluating body dissatisfaction during pregnancy by Wu et al.²⁴ Consequently, we aimed to investigate body dissatisfaction during the second and third trimesters among pregnant women in the Japanese context. Additionally, we utilized figure rating scales, specially developed to assess body dissatisfaction during the 6th and 10th months of pregnancy. The findings revealed that the desire for thinness during the 10th month was significantly higher than that in the 6th month.

Previous research on body dissatisfaction among pregnant women has often involved comparisons between pregnant and non-pregnant populations,²⁵ or between pregnant and postpartum populations.⁵ However, some previous studies have assessed variations in body dissatisfaction during specific pregnancy periods. An Australian cohort study examined body weight dissatisfaction at three-month intervals and found an increase in body weight dissatisfaction as pregnancy progressed.²⁶ Similarly, our study employed figure rating scales to evaluate body size-related body dissatisfaction, revealing a similar trend—an escalation in body dissatisfaction from the 6th to the 10th month of pregnancy, as indicated in Table 2. By contrast, a study conducted in Hong Kong used the Body Dissatisfaction Subscale of the Eating Disorder Inventory-2 to measure comprehensive body dissatisfaction and reported lower body dissatisfaction in the second trimester compared with that in pre-pregnancy and postpartum periods; however, no significant difference was observed between the second and third trimesters.²⁷ Overall, these findings suggest an increase in body size-related body dissatisfaction from the second to the third trimester.

Among those who experienced body dissatisfaction during the sixth month of pregnancy, there was a significant increase in body dissatisfaction in the 10th month, as depicted in Tables 3 and 4. However, as indicated in Table 5, among the 135 participants during the sixth month, 75

(55.6%) experienced body dissatisfaction and desired to be thin. Similarly, during the 10th month, 79 (58.5%) of the 135 participants reported body dissatisfaction and the desire for thinness. This implies that not all pregnant women experience body dissatisfaction. Consequently, assessing the presence of body dissatisfaction at the sixth month of pregnancy, makes it possible to identify individuals who are likely to experience an increase in body dissatisfaction toward the 10th month of pregnancy. Figure rating scales offer a quick, convenient, and cost-effective method to quantify body dissatisfaction visually.²⁸ These scales are also recommended for implementation in clinical follow-up consultations for pregnant women.²⁹ Using figure rating scales in the sixth month of pregnancy could help identify those who will experience increased body dissatisfaction later on.

We examined alternations in perceived and ideal body sizes from the 6th to the 10th months of pregnancy (Table 2). Only one previous cross-sectional study conducted in Lithuania has investigated perceived and ideal body sizes among pregnant women using Stunkard et al's¹⁹ figure rating scale developed for non-pregnant individuals.³⁰ By contrast, our longitudinal study employed figure rating scales tailored for specific gestational months, revealing significant increases in both ideal and perceived body sizes during the transition from the 6th to the 10th month. Anthropometric body size increased by 1.88 kg/m² (SD = 0.78), ideal body size increased by 1.94 kg/m² (SD = 2.78), and perceived body size increased by 2.90 kg/m² (SD = 3.01) in this timeframe. These findings indicated a nearly equivalent increase in anthropometric and ideal body sizes, coupled with a more substantial increase in perceived body size, especially among the group of normal weight before pregnancy compared with the underweight group. Consequently, the substantial increase in perceived body size contributed to the heightened body dissatisfaction from the 6th to the 10th month. Furthermore, pregnant women with body dissatisfaction and a desire to be thin exhibited larger perceived body size compared with those without body dissatisfaction, both in the 6th and 10th months (Table 5). This underscored the association between perceived body size and dissatisfaction during the second and third trimesters. According to Hill et al's conceptual model, pregnant body image is influenced by maternal psychological factors, knowledge about gestational weight gain, and social factors.³¹ Therefore, addressing perceived body size through these channels might help alleviate body dissatisfaction by the 10th month of pregnancy. Midwives should inform pregnant women about appropriate gestational weight gain and provide health consultations that consider psychological and social factors.

The prevalence of underweight and overweight participants in this study was 25.9% and 3.0%, respectively, as depicted in Table 1. Unlike Western countries, where obesity and excessive gestational weight gain are the predominant health problems, underweight young women and inadequate gestational weight gain are major health concerns in Japan. A major reason many young women in Japan are underweight is their excessive desire to be thin, which can lead to severe obstetric problems. This study focused on body dissatisfaction during pregnancy—specifically, the desire to become thinner, and the results suggested that some women continued to experience body dissatisfaction even during pregnancy.

Limitations

This study has several limitations. First, the reliability of the original figure rating scales could be compromised. Owing to the ongoing growth of the pregnant body, assessing test-retest reliability posed challenges. Nevertheless, the figure rating scales accurately depicted pregnant body shapes, allowing us to establish a link between body dissatisfaction and BMI, thereby substantiating construct validity. Second, concerns could arise regarding the accuracy of self-reported weight during pregnancy.³² However, a comparison between self-reported weight at the 10th month and weight measurements taken during clinical follow-ups (n = 103) revealed a person r value of 0.985 (p < 0.001), demonstrating almost perfect correspondence between self-reported and

measured weights. Third, the participation rate stood at a modest 39.7%. This could introduce selection bias and potentially lower external validity, warranting careful consideration when generalizing the findings. However, the impressive follow-up rate of 83.9% among participants ensured high internal validity.

CONCLUSION

Our results suggest increasing body size perception and body dissatisfaction (ie, the desire to become thinner) during pregnancy among women who have body dissatisfaction in their second trimester. This suggests that midwives or prenatal health providers must pay further attention to patient body dissatisfaction when providing health consultations on gestational weight management.

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AUTHOR CONTRIBUTIONS

Study design: Sayaka Tsuchiya, Kazutomo Ohashi.

Data collection: Sayaka Tsuchiya.

Data analysis: Sayaka Tsuchiya, Kazutomo Ohashi.

Manuscript writing: Sayaka Tsuchiya, Masayuki Endo, Kazutomo Ohashi.

CONFLICT OF INTEREST

We declare no conflict of interest related to this study.

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