



Published in final edited form as:

*Body Image*. 2011 June ; 8(3): 297–300. doi:10.1016/j.bodyim.2011.03.002.

## Body Satisfaction During Pregnancy

Katie A. Loth, RD, MPH<sup>1</sup>, Katherine W. Bauer, PhD, MS, MPH<sup>1</sup>, Melanie Wall, PhD<sup>2</sup>, Jerica Berge, PhD, LMFT<sup>3</sup>, and Dianne Neumark-Sztainer, PhD, MPH<sup>1</sup>

<sup>1</sup>Division of Epidemiology and Community Health, School of Public Health, University of Minnesota

<sup>2</sup>Division of Biostatistics, University of Minnesota

<sup>3</sup>Department of Family Medicine and Community Health, University of Minnesota

### Abstract

The current study examines how body satisfaction of pregnant women compares to that of nonpregnant women. The sample included 68 pregnant and 927 nonpregnant young women who participated in a population-based longitudinal study examining eating and weight concerns in young adults. Body satisfaction was assessed using a 10-item modified version of the Body Shape Satisfaction Scale. The longitudinal design allowed for the assessment of body satisfaction among women both prior to and during their pregnancy. Mean body satisfaction was higher in pregnant women (32.6, 95% CI: 30.7–34.5) than nonpregnant women (29.6, 95% CI: 29.1–30.1) with moderate effect size 0.32, after adjusting for body satisfaction and body mass index prior to pregnancy, indicating that pregnant women experienced a significant increase in body satisfaction from the time prior to their pregnancy ( $p = .003$ ) despite weight gain. These findings have important implications for clinicians delivering weight-related messages to women during pregnancy.

### Keywords

body satisfaction; pregnancy; young adult

---

Negative body image is pervasive among women. High levels of body dissatisfaction are primarily attributed to the existence of social pressures regarding thinness. It has been theorized that culturally defined roles may have an impact on body satisfaction, with pressure to achieve a culturally ideal shape or figure being more important in some social roles than others (Davies & Wardle, 1994). Pregnancy is a period in women's lives when the role of a woman's body changes dramatically. To date, research examining body image during pregnancy indicates wide variation in women's responses to the physical changes that accompany pregnancy, with reactions ranging from distress to neutral to liberation (Duncombe, Wertheim, Skouteris, Paxton, & Kelly, 2008; Fairburn & Welch, 1990; Goodwin, Astbury, & McMekken, 2000). Davies and Wardle (1994) suggest that because pregnancy represents the start of a new role for women, a role that emphasizes the importance of reproduction over culturally-defined beauty, women are likely to experience

---

Corresponding author: Katie A Loth, RD, MPH, Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Suite 300, 1300 South Second Street, Minneapolis, MN 55454, fall0075@umn.edu, Phone: 612-624-5236, Fax: 612-626-7103.

**Publisher's Disclaimer:** This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

unchanged or even improved body image during pregnancy. This notion is supported by other studies (Boscaglia, Skouteris, & Wertheim, 2003; Clark & Ogden, 1999; Duncombe et al., 2008), in which pregnant women were found to adjust to changes in their body without a negative impact on their body image. Early qualitative research by Richardson (1990) provides context to this adjustment process, noting that women experience the physical changes related to pregnancy as “transient” and “unique to the childbearing experience”, allowing them to transition through these changes without distress.

In contrast, some research suggests that the weight gain and body shape changes caused by pregnancy can result in a decline in body satisfaction among some women. For example, Goodwin et al. (2000) found that women experienced a significant decline in body satisfaction from pre-pregnancy to early pregnancy. Additionally, in a retrospective study of 50 pregnant women, conducted by Fairburn and Welch (1990), about half of the women reported feeling distress about their weight gain, while the other half did not experience weight concerns.

From this literature, conclusions about the impact of pregnancy on a women’s body satisfaction are difficult to make. The varied findings may reflect the use of different study designs, as well as different measures of body image, making direct comparisons across studies difficult. Further, study designs that utilized a retrospective report of pre-pregnancy body satisfaction may be biased. For example, it is possible that the experience of pregnancy changes the way a women recalls and reports her body satisfaction during the time period in her life before she was pregnant. A prospective study with recruitment of subjects prior to pregnancy has the potential to clarify the changes in body satisfaction that are brought on by the pregnancy experience.

The current study expands upon the existing literature by examining body satisfaction during pregnancy using a prospective, community-based study design. The primary aim of the current research study is to examine how the body satisfaction of pregnant women compares to that of nonpregnant women. Understanding how pregnancy may affect women’s body satisfaction is of particular importance because it is known that pregnant women who experience negative body satisfaction are more likely to engage in unhealthy eating, dieting, fasting and purging behaviors as compared to those who are satisfied with their bodies (Conti, Abraham, & Taylor, 1998). The use of these behaviors has been linked to inadequate weight gain, premature delivery, low infant birth weight, and in extreme cases, maternal and fetal death (Bulik et al., 1999; Conti, Abraham, & Taylor, 1998; Franko & Walton, 1993). Further, the information to be gleaned from this study will provide clinicians with an improved understanding of how their pregnant patients experience their bodies during pregnancy, thereby allowing them to more appropriately tailor weight-related messages to these women.

## Method

### Participants and Study Design

Data for this analysis were drawn from the second and third waves of Project EAT, a longitudinal study designed to examine weight-related issues in adolescents and young adults. The sample for the current study (before exclusions) includes 1083 female participants (mean age: 25.3, range 19.8–31.2) who responded to 5- and 10-year follow-up surveys. All study protocols were approved by the University of Minnesota’s Institutional Review Board Human Subjects Committee. Details on the study design and study population have been previously described (Larson, Neumark-Sztainer, Story, van den Berg, & Hannan, in press; Eisenberg, Neumark-Sztainer, & Paxton, 2006; Neumark-Sztainer, Story, Hannan, & Croll, 2002)

## Measures

Pregnancy was assessed with the question, “If you are a female, are you currently pregnant or breastfeeding? Response options included *no*, *yes-pregnant*, and *yes-breastfeeding*. Body satisfaction was assessed with a modified version of the Body Shape Satisfaction Scale (Pingitore, Spring, & Garfield, 1997) and included 10 items assessing satisfaction with different body parts (e.g., height, weight, stomach, and hips), with five Likert response categories ranging from *very dissatisfied* to *very satisfied* (Cronbach's  $\alpha = .93$ ; test-retest  $r = .89$ ). Responses to these items were summed and the body satisfaction scale ranged from 10–50 with higher scores indicating more satisfaction. Weight status was assessed using self-reported height and weight, from which body mass index (BMI, kg/m<sup>2</sup>) was calculated. Self-report of height and weight were validated in a subsample of 62 female study participants for whom height and weight measurements were completed by trained research staff. Results showed high correlations between self-reported BMI and measured BMI among females ( $r = .98$ ). Relationship status was assessed with the following question: “What is your relationship status? (Mark one.)”. Response categories included *single or casually dating*, *committed dating relationship or engaged*, *married*, *same sex domestic partner*, *separated or divorced*, and *widowed*. Number of children was assessed with the following question, “How many children do you have (including step-children or adopted children)?”. Response categories included: *none*, *one*, *two*, and *three or more*.

Gender, race, and socioeconomic status (SES) were assessed by self-report at baseline. Five levels of SES were based primarily on the highest educational level completed by either parent for most respondents (Neumark-Sztainer, Story, et al., 2002). Parental SES was utilized given that many individuals do not complete their education before their mid or later twenties therefore making widely used indicators of socioeconomic status such as education and income are likely poor measures of SES for young people (Shavers, 2007).

## Data Analysis

Of the 1083 women who participated in Project EAT at Time 2 and 3, 1070 responded to the pregnancy question. Women who responded that they were breastfeeding ( $n = 34$ ) were excluded from the current analysis and women who, at Time 2, were either pregnant, breastfeeding or missing on these questions ( $n = 48$ ) were also excluded, leaving 995 women in the analytic sample. Descriptive characteristics of the pregnant and nonpregnant women were summarized with proportions. Chi-square tests were used to test for differences in these characteristics between the two groups and Cramer's Phi is presented as the effect size. Comparisons of mean body satisfaction between pregnant and nonpregnant women were performed using multiple linear regression of body satisfaction on current pregnancy status controlling for age, race, SES, relationship status, an indicator of whether the woman already had children, as well as Time 2 BMI and body satisfaction. The measurements of BMI and body satisfaction at Time 2 were included as covariates in order to isolate the potential effect of current pregnancy status on change in body satisfaction. Regression adjusted mean body satisfaction and 95% confidence intervals are presented for pregnant and nonpregnant women with a  $p$ -value testing for the difference and Cohen's  $d$  calculated for the effect size. We also fit a model that additionally included an interaction between already having children and currently being pregnant in order to assess if the relationship between pregnancy and body satisfaction differed by parental status. All analyses were performed in SAS 9.2.

Multiple imputation was implemented in order to avoid deleting women with partially missing covariates (approximately 9% of the sample). Fifty complete datasets were generated with SAS PROC MI and multiple regression results were analyzed using Proc MIANALYZE which incorporates variability due to random imputation. Because attrition

from the Time 3 sample did not occur at random, in all analyses, the data were weighted using the response propensity method (Little, 1986). The weighting method resulted in estimates representative of the demographic make-up of the original school-based sample, thereby allowing results to be more fully generalizable to the population of young people in this area.

## Results

### Sample Characteristics

At Time 3, 6.8% ( $n = 68$ ) of women reported being pregnant. Pregnant women were more likely to be married (Cramer's  $\phi$  effect size ( $ES$ ) = .22,  $p < .001$ ), and of low socioeconomic status ( $ES = .18$ ,  $p < .001$ ) than nonpregnant women. Additionally, women who were currently pregnant were more likely than nonpregnant women to already have at least one other child at home ( $ES = .15$ ,  $p < .001$ ). The average BMI for nonpregnant women was 26.0 ( $SD = 6.4$ ) and for pregnant women was 27.4 ( $SD = 6.7$ ), but the difference was not statistically significant ( $p = .08$ ) (Table 1). However, the mean change in BMI from Time 2 for nonpregnant women was 2.03 ( $SD = 3.68$ , 95%  $CI : 1.79-2.28$ ) and for pregnant women was 3.64 ( $SD = 4.44$ , 95%  $CI : 2.54-4.74$ ), indicating that the pregnant women did experience a greater increase in BMI than their nonpregnant counterparts over the 5 years.

### Mean Body Satisfaction During Pregnancy

The adjusted mean body satisfaction for the sample of pregnant women at Time 3 was 32.6 (95%  $CI : 30.7-34.5$ ), which was significantly higher ( $p = .003$ ) than nonpregnant women's mean body satisfaction of 29.6 (95%  $CI : 29.1-30.1$ ). This difference represents an effect size of .32 (Cohen's  $d$  effect size =  $[(32.6-29.6)/9.4]$  where 9.4 is the standard deviation of body satisfaction across the sample). As body satisfaction at Time 2 was included as a covariate in the regression model, these results imply a significantly larger increase in body satisfaction since Time 2 for women who are currently pregnant compared to those who are not. In order to explore whether the association between pregnancy and body satisfaction differed for women who already had a child, a secondary analysis was conducted. This test of interaction was nonsignificant ( $p = .64$ ), indicating that body satisfaction improvement in body satisfaction does not differ between first time mothers and women who have other children at home.

## Discussion

During pregnancy women experience a number of substantial physical changes, including weight gain. Results from the current study suggest that regardless of these physical changes, pregnant women have significantly higher body satisfaction than their nonpregnant counterparts. This finding, which aligns with previous research (Boscaglia et al., 2003; Clark & Ogden, 1999; Davies & Wardle, 1994), lends support to the idea that a women's body image is more complex than can be explained solely by a discrepancy from a culturally ideal shape or weight. Research by Malloy and Herzberg (1998) offers a possible explanation indicating that women in some social roles are more protected from negative body image. Malloy and Herzberg posit that this is due to the fact that an individual's judgment of their body is a reflection of what is desirable within their particular cultural or social group. Along these lines, the increase in body satisfaction seen during pregnancy among the young women in the present study could be indicative of these women taking on a new social role in which they are more protected from the pressure to achieve an ideal body shape or size. While future research is needed to more fully understand the increase in body satisfaction seen during pregnancy, these findings, in combination with Malloy and Herzberg's research on social roles, suggest that interventions aimed at diversifying young

women's definition of their social role, as well as helping to direct their attention toward the functionality of their bodies, may have the potential to lead to improvements in overall body satisfaction during many periods in life in addition to pregnancy.

As in the current study, a small number of other studies have indicated that women experience higher body satisfaction during their pregnancy as compared to pre-pregnancy (Boscaglia et al., 2003; Clark & Ogden, 1999; Fairburn & Welch, 1990). The current study extends extant literature by assessing a woman's body satisfaction both prior to and during her pregnancy through the use of a prospective study design. The present findings, in conjunction with previous research, suggest that there is something about the experience of being pregnant that increases a woman's satisfaction with her physical appearance and indicates that despite the weight gain and physical changes that accompany pregnancy, women are able to navigate this transition in a positive way.

Strengths and limitations of the current study need to be taken into account in interpreting the findings. The prospective nature of the study design allowed us to examine a woman's body satisfaction prior to her pregnancy without concern that her current pregnancy might alter the way she remembered her former body satisfaction. To our knowledge this is the only prospective study that has examined associations between pregnancy and changes in body satisfaction. Additionally, the use of population-based recruitment enhances the generalizability of our study results to other populations of young adult women. However, because research related to pregnancy was not an initial aim of the overall study our assessment of pregnancy is somewhat limited. We did not assess stage of pregnancy at the time of survey completion. Because a woman's shape and weight changes differently at different points throughout her pregnancy, information about the gestational stage of her pregnancy at the time she was surveyed would have added more depth to our analysis. Finally, given the rapid physical changes that occur during and following pregnancy, future research with more frequent points of data collection, both prior to, during and following pregnancy, is warranted.

## Conclusions

Overall, this study found evidence for improved body satisfaction during pregnancy, despite probable changes in body shape and size. These findings have important implications for clinicians working with women during pregnancy. While weight gain during pregnancy has recently received a great deal of attention within the scientific community (Althuisen, van Poppel, Seidell, & van Mechelen, 2009; Fraser et al., 2010; Ricci, Parrzzini, Ciaffarino, Cipriani, & Polverino, 2010) related closely to the United States Institute of Medicine's release of new guidelines for weight gain during pregnancy (Rasmussen & Yaktine, 2009) there is a dearth of literature examining the impact of weight gain counseling by clinicians for pregnant women. Findings from the current study suggest the importance of finding a balance between helping women to achieve weight gain within an appropriate range, while delivering weight related messages in a way that helps to maintain the improved body satisfaction women may experience during pregnancy. Future research aimed at exploring how clinicians can best achieve this delicate balance within the context of prenatal weight gain counseling is warranted. More broadly, the current findings also demonstrate the need to investigate the importance of female social roles in the development of women's body satisfaction. Specifically, the design and analysis of interventions aimed at encouraging young women to challenge the focus on weight and shape within their social role and to examine how their body contributes to this role in ways beyond thinness and beauty should be considered.

## Acknowledgments

The project described was supported by Grant Number R01HL084064 from the National Heart, Lung, and Blood Institute (D Neumark-Sztainer PI). Katie Loth's time was supported in part by the Adolescent Health Protection Program (School of Nursing, University of Minnesota) grant number T01-DP000112 (L Bearinger PI) from the Centers for Disease Control and Prevention (CDC). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Heart, Lung, and Blood Institute, the National Institutes of Health, or the CDC.

## References

- Allison, P. Imputation of categorical variables with PROC MI; SAS User Group International 30 Proceedings, Paper 113-30; 2005.
- Althuisen E, van Poppel MN, Seidell JC, van Mechelen W. Correlates of absolute and excessive weight gain during pregnancy. *Journal of Women's Health*. 2009; 18:1559–1566.
- Boscaglia N, Skouteris H, Wertheim EH. Changes in body image satisfaction during pregnancy: A comparison of high exercising and low exercising women. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2003; 43:42–45.
- Bulik CM, Sullivan PF, Fear JL, Pickering A, Dawn A, McCullin M. Fertility and reproduction in women with anorexia nervosa: a controlled study. *The Journal of Clinical Psychiatry*. 1999; 60:130–137. [PubMed: 10084645]
- Cash TF, Henry PE. Women's body images: The results of a national survey in the USA. *Sex Roles*. 1995; 33:19–28.
- Clark M, Ogden J. The impact of pregnancy on eating behavior and aspects of weight concern. *International Journal of Obesity*. 1999; 23:18–24. [PubMed: 10094572]
- Conti J, Abraham S, Taylor A. Eating behaviour and pregnancy outcome. *Journal of Psychosomatic Research*. 1998; 44:465–477. [PubMed: 9587889]
- Davies K, Wardle J. Body image and dieting in pregnancy. *Journal of Psychosomatic Research*. 1994; 38:787–799. [PubMed: 7722959]
- Devine CM, Bove CF, Olson CM. Continuity and change in women's weight orientations and lifestyle practices through pregnancy and the postpartum period: The influence of life course trajectories and transitional events. *Social Science and Medicine*. 2000; 50:567–582. [PubMed: 10641808]
- Duncombe D, Wertheim EH, Skouteris H, Paxton SJ, Kelly L. How well do women adapt to changes in their body size and shape across the course of pregnancy? *Journal of Health Psychology*. 2008; 13:503–515. [PubMed: 18420758]
- Eisenberg ME, Neumark-Sztainer D, Paxton SJ. Five-year change in body satisfaction among adolescents. *Journal of Psychosomatic Research*. 2006; 61:521–527.
- Fairburn CG, Welch SL. The impact of pregnancy on eating habits and attitudes to shape and weight. *International Journal of Eating Disorders*. 1990; 9:153–160.
- Franko DL, Walton BE. Pregnancy and eating disorders: a review and clinical implications. *International Journal of Eating Disorders*. 1993; 13:41–47. [PubMed: 8477276]
- Fraser A, Tilling K, Macdonald C, Satter N, Path MB, Benfield L, Lawlor DA. Association of maternal weight gain in pregnancy with offspring obesity and metabolic and vascular traits in childhood. *Circulation*. 2010; 121:2557–2564. [PubMed: 20516377]
- Goodwin A, Astbury J, McMekken J. Body image and psychological well-being in pregnancy: A comparison of exercisers and non-exercisers. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2000; 40:443–447.
- Horton NJ, Lipsitz SR, Parzen M. A potential for bias when rounding in multiple imputation. *American Statistician*. 2003; 57:229–232.
- Larson N, Neumark-Sztainer D, Story M, van den Berg P, Hannan PJ. Survey development for assessing correlates of young adults' weight behavior. *American Journal of Health Behavior*. (in press).
- Little RJA. Survey nonresponse adjustments for estimates of means. *International Statistical Review*. 1986; 54:139–157.

- Molloy BL, Herzberg SD. Body image and self-esteem: A comparison of African-American and Caucasian women. *Sex Roles*. 1998; 38:631–643.
- Neumark-Sztainer D, Story M, Hannan PJ, Croll JK. Overweight status and eating patterns among adolescents: Where do youth stand in comparison to the Healthy People 2010 Objectives? *American Journal of Public Health*. 2002; 92:844–851. [PubMed: 11988458]
- Pingitore R, Spring B, Garfield D. Gender differences in body satisfaction. *Obesity Research*. 1997; 5:402–409. [PubMed: 9385613]
- Rasmussen, KM.; Yaktine, AL., editors. Weight gain during pregnancy: Reexamining the guidelines. 2009. Retrieved from <http://www.iom.edu/Reports/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines.aspx>
- Ricci E, Parrzzini F, Ciaffarino F, Cipriani S, Polverino G. Pre-pregnancy body mass index mass index, maternal weight gain during pregnancy and risk of small-for-gestational age birth: Results from a case–control study in Italy. *Journal of Maternal-Fetal and Neonatal Medicine*. 2010; 23:501–505. [PubMed: 19724969]
- Richardson P. Women’s experience of body change during normal pregnancy. *Maternal-Child Nursing Journal*. 1990; 19:93–111. [PubMed: 2136574]
- Shavers V. Measurement of socioeconomic status in health disparities research. *The Journal of National Medical Association*. 2007; 99:1013–1023.

Table 1

Descriptive characteristics of the currently pregnant and nonpregnant sample ( $n = 995$ )<sup>a</sup>

	Pregnant Participants ( $n = 68$ ) <sup>b</sup>		Nonpregnant Participants ( $n = 927$ ) <sup>b</sup>		Effect size (Cramer's Phi) <sup>c</sup>	p-value
	N	%	N	%		
<b>Age cohort</b>						
Younger (mean age = 23.0)	24	35.4	268	28.9	.04	.256
Older (mean age = 26.2)	44	64.6	659	71.1		
<b>Race</b>						
White	26	38.6	457	50.0		.101
African American	15	22.6	170	18.6		
Asian	21	30.8	167	18.3	.10	
Hispanic	3	4.4	46	5.0		
Native American	1	2.1	31	3.4		
Mixed/Other	1	1.5	44	4.8		
<b>Socio-economic Status</b>						
Low	27	40.8	138	15.5		
Lower middle	9	14.1	162	18.1		
Middle	16	23.6	250	28.1	.18	< .001
High middle	12	18.0	207	23.3		
High	2	3.6	134	15.1		
<b>Relationship Status</b>						
Single/Casually dating	3	5.0	304	33.0		< .001
Committed relationship, but not married	30	45.3	430	46.6	.22	
Married	28	43.3	180	19.5		
Separated or divorced	4	6.3	8	0.9		
<b>Other children</b>						
None	30	44.1	655	71.0	.15	< .001
One or more	38	55.9	267	29.0		

<sup>a</sup>The analysis sample of  $n = 995$  excludes 88 (from the total 1083) women. This includes 13 who did not respond to the pregnancy question, 27 women who identified as breastfeeding, and 48 who, at the previous EAT survey 5 years earlier, were pregnant or breastfeeding or missing responses on these variables.



<sup>b</sup>Total  $n$ s vary slightly within characteristics due to missing responses.

<sup>c</sup>Cramer's Phi is an effect size measure for contingency tables and is equal to the square root of the Chi-square statistic divided by  $n$ . Values between .10-.30 are considered small, .30-.50 moderate and >.50 large.