Published in final edited form as:

Womens Health Issues. 2014 ; 24(3): e291–e295. doi:10.1016/j.whi.2014.02.007.

A Survey of Health Behaviors in Minority Women in Pregnancy: The Influence of Body Mass Index

Michelle A. Kominiarek, MD¹

¹University of Illinois at Chicago, College of Medicine, Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine

Abstract

Background—An effective behavioral intervention for gestational weight gain in minority obese women needs to incorporate their baseline health behaviors and nutrition patterns. The objective of this study was to compare racial-ethnic differences in health behaviors and nutrition in pregnant obese and non-obese minorities.

Methods—A face-to-face 75-item survey was administered to 94 women (46% non-obese, 54% obese; 71% blacks, 29% Hispanics) at a prenatal visit to an inner-city clinic. Television-watching, exercise, and nutrition were compared between obese and non-obese women and racial-ethnic differences were compared within each body mass index category using chi-square and fisher's exact tests. Interactions between body mass index category and race-ethnicity for each health behavior were examined.

Findings—More obese women described their nutrition as “fair” or “poor” (36% vs. 15%, $p=0.02$) and missed more meals per day (21% vs. 6%, $p=0.03$) compared to non-obese women. Obese blacks were less likely to improve their nutrition during pregnancy compared to obese Hispanics (28% vs. 58%, $p=0.08$). Non-obese blacks watched more television ($p=0.03$) and exercised less during pregnancy ($p=0.04$) than non-obese Hispanics. Except for dairy products, there were no differences in daily nutrition (fruit, soda, vegetables, chips) among the body mass index categories and racial-ethnic groups; however, <50% of all participants consumed fruits and vegetables every day. There was an interaction between body mass index category and race-ethnicity: obese Hispanics exercised less before pregnancy ($p=0.02$), but exercised more during pregnancy ($p=0.01$) compared to non-obese Hispanics.

Conclusions—Interventions for gestational weight gain in obese women may have greater success if they considered racial-ethnic differences in health behaviors, especially related to exercise.

© 2014 Jacobs Institute of Women's Health. Published by Elsevier Inc. All rights reserved.

Corresponding Author: Michelle A. Kominiarek, MD, Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine, 820 South Wood Street M/C 808, Chicago, Illinois 60612, (312) 413-4888 office, (312) 996-4238 fax, Mkomin1@uic.edu.

Disclosure: The author has no conflict of interest.

Presented as a poster at the Ninth Annual Interdisciplinary Women's Health Research Symposium in Bethesda, MD November 2012.

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.

Introduction and Background

In the United States, 55.8% of reproductive age women (20–39 years) were overweight and 31.9% were obese in 2009–2010.(Flegal, Carroll, Kit, & Ogden, 2012) There are profound racial-ethnic differences related to obesity and reproductive age female minorities: 34.4% of Hispanic, and 56.2% of non-Hispanic black women were obese compared to 26.9% of non-Hispanic whites in 2009–2010.(Flegal et al., 2012) Compared to men and women in all racial/ethnic groups, non-Hispanic black women consistently have the highest prevalence of obesity.(Flegal et al., 2012; Wang & Beydoun, 2007)

The combination of obesity and pregnancy increases the risk for additional complications of gestational diabetes, hypertension, cesarean deliveries with their infectious complications, birth defects, and stillbirth.(Chu et al., 2007; Gunatilake & Perlow, 2011; Kominiarek, Vanveldehuisen, et al., 2010; Myles, Gooch, & Santolaya, 2002; Stothard, Tennant, Bell, & Rankin, 2009; Weiss et al., 2004) One approach to addressing obesity during pregnancy is to improve health behaviors (e.g., smoking, physical activity, and nutrition) in order to meet gestational weight gain recommendations and improve other perinatal outcomes. Pregnancy is often viewed as the ultimate motivator to improve health behaviors with the goal of having a healthy pregnancy and infant. Nonetheless, according to meta-analyses and systematic reviews, interventions that have focused on a combination of dietary counseling, weight monitoring, and exercise programs for overweight or obese women to date have had moderate to no influence on gestational weight gain or other perinatal outcomes.(Campbell, Johnson, Messina, Guillaume, & Goyder, 2011; Dodd, Grivell, Crowther, & Robinson, 2010; Oteng-Ntim, Varma, Croker, Poston, & Doyle, 2012) Most importantly, the majority of the women who participated in these behavioral interventions were non-Hispanic whites. (Claesson et al., 2008; Guelinckx, Devlieger, Mullie, & Vansant, 2010; Phelan et al., 2011; Polley, Wing, & Sims, 2002; Quinlivan, Lam, & Fisher, 2011; Wolff, Legarth, Vangsgaard, Toubro, & Astrup, 2008) These issues limit the generalizability of the study findings.

In order to design an effective behavioral intervention for obese pregnant minority women that ultimately aims to improve perinatal outcomes, the baseline health behaviors and nutrition patterns of the sample need to be considered. The current literature on health behaviors in minority, obese pregnant women is limited. The objective of this study was to describe health behaviors and nutrition in minority pregnant women. It was hypothesized that obese women would have worse health behaviors compared to non-obese women and there would be differences in health behaviors and nutrition patterns between minority racial-ethnic groups..

Methods

A one-time structured 75 item face-to-face survey was administered to a convenience sample of 105 pregnant (54% obese, 46% non-obese; 65% non-Hispanic blacks, 26% Hispanics, and 8.7% other) women at prenatal clinic affiliated with a large university tertiary-care hospital located in an urban setting that serves primarily low income racial-ethnic minority women. Women were approached to participate in a survey about “pregnancy and obesity” after they were identified as presenting for their first prenatal visit

at any gestational age with a midwife or physician (resident or faculty obstetrician-gynecologist) over a 6 month period in 2006. Exclusion criteria were less than 18 years of age, non-English speaking, or a transfer of care from a different prenatal provider whether it was within the university system or outside the network. The participation rate was >99%; only one patient who was approached to participate declined enrollment because of time constraints. Of the 105 enrolled women, two were excluded. One woman was later determined not to be pregnant (pseudocyesis). Owing to differences in body mass index categories, the analysis did not include the survey results of another woman with congenital dwarfism. Participants were all English-speaking and paid \$15 at the end of the interview to compensate them for their time. This survey was administered as part of a larger study that also assessed participant knowledge of the risks of obesity in pregnancy. (Kominiarek, Vonderheid, & Endres, 2010)

Informed consent was obtained from participants after the study purpose and procedures were explained. The height and weight were measured at the time of the interview. Interviews were conducted in a private room while women waited for their visit. Interviews were not audiotaped and the time to administer the paper survey was approximately 20 minutes. The items for the health behaviors and nutrition measures were taken from several sources including the 2005 Youth Risk Behavior Survey (e.g., television watching, exercise and smoking habits, nutrition recall by food groups for 7 days prior to the survey, practice of eating less to lose or keep from gaining weight) and the 2003–2004 National Health and Nutrition Examination Survey (e.g., age, race, education, marital status, income). (National Health and Nutrition Examination Survey 2003–2004–2005; Youth Risk Behavior Survey 2005) The items from the Youth Risk Behavior Survey were adapted for pregnancy, similar to the Vonderheid et al study. (Vonderheid, Norr, & Handler, 2007) Nutrition recall for 7 days prior to the survey was performed to determine if women met the U.S. Department of Agriculture (USDA) daily requirements for dairy, fruit or fruit juice, protein, vegetables, and grains. (*Dietary Guidelines for Americans*, 2010) The nutrition information was collected as a response to “how many days in the past week” the food group was consumed or how many days in the past week the behavior occurred (e.g., missed a meal, ate less than usual to lose or keep from gaining weight) with a response range of 0 to 7 days. The interview instrument also gathered information regarding parity, gestational age at the time of the interview, whether the pregnancy was planned, and prior use of pharmaceuticals for weight loss. Institutional Review Board approval was obtained from the University of Illinois at Chicago.

The analysis was limited to the 94 participants who self-reported their race-ethnicity as either black/African American or Hispanic/Latino (6 whites and 3 women of other race-ethnicities were excluded). Three separate comparisons of health behaviors and nutrition were performed among the groups: obese (BMI ≥ 30 kg/m²) vs. non-obese (BMI < 30 kg/m²), obese non-Hispanic blacks vs. Hispanics, and non-obese non-Hispanic blacks vs. Hispanics using Chi-square, Fisher’s exact, and student t-tests as appropriate. A p-value <0.05 was considered statistically significant. Tests for interaction between body mass index category (BMI ≥ 30 kg/m² vs. BMI < 30 kg/m²) and race-ethnicity (non-Hispanic blacks vs. Hispanics) were done for each of the health behaviors and nutrition variables with logistic regression ($y = \text{race} + \text{obese} + \text{race} * \text{obese}$) and odds ratios (OR) with 95% confidence

intervals (CI) were reported. The purpose of this testing was to determine how the differences in health behaviors and nutrition between the obese and non obese groups varied by race-ethnicity. All statistical analyses were performed with SAS software (version 9.2, Cary, N.C.).

Results

There were no differences in the demographics between obese and non-obese women ($p>0.05$) except for fewer nulliparas in the obese group ($p=0.04$, Table 1). There were also no differences in the demographics between non-Hispanic blacks and Hispanics except for fewer married and planned pregnancies in blacks ($p=0.01$, Table 1). Smoking and exercise did not differ between obese and non-obese women or among non-Hispanic blacks and Hispanics except that non-obese blacks were more likely to watch 3 hours of television per day compared to non-obese Hispanics, $p=0.03$ (Table 2). The majority of the sample (71%) watched 3 hours of television per day. Non-obese non-Hispanic blacks were more likely to exercise less during pregnancy compared to non-obese Hispanics, $p=0.048$. Walking was the most common reported form of exercise among the weight and race-ethnicity groups.

Obese women were more likely to describe their nutrition as “poor” or “fair” compared to non-obese women ($p=0.02$), but there were no differences in self-report of nutrition when comparing the body mass index and race-ethnicity groups (Table 3). Overall, 45% of participants reported that their nutrition improved during pregnancy, but it worsened in 22%. There were no differences in the nutrition recall (i.e., fruit, soda, vegetables, chips, etc.) for 7 days prior to the survey among the weight and racial-ethnic groups except for dairy products in obese non-Hispanic blacks vs. obese Hispanics ($p=0.049$) and missing a meal in obese vs. non-obese women ($p=0.03$, Table 4). No group met the USDA daily requirements for dairy, fruit or fruit juice, protein, vegetables, and grains with $<50\%$ of all participants reporting daily consumption of vegetables. There was an interaction between body mass index category and race-ethnicity such that obese blacks were less likely to not exercise prior to pregnancy (OR 0.22, 95% CI 0.05–0.90) compared to obese Hispanics. Furthermore, obese Hispanics were less likely to exercise less during pregnancy (OR 0.12, 95% CI 0.02–0.69) compared to non-obese Hispanics. None of the other tests for interactions between body mass index and race-ethnicity groups were significant.

Conclusion and Discussion

Although pregnancy is often considered a time when women are motivated to improve their health behaviors with the goal of having a “healthy” pregnancy, less than half of the women in this study reported improving their exercise and nutrition patterns for the pregnancy. This suggests that the actual changes in health behaviors in these women may not be as high as expected. Overall, the predominantly low-income minority women in this study spent a significant amount of time watching television every day. Preconception multivitamin (19–24%) and folic acid intake (13–14%) was lower than prior reports from minority women of low socioeconomic status. (Harelick, Viola, & Tahara, 2011) Based on food recall for one week prior to the survey, the participants’ nutrition patterns also did not come close to meeting current USDA dietary guidelines which recommends daily consumption of dairy,

fruit, proteins, vegetables, and grains. Furthermore, obese blacks were the least likely to improve their nutrition during pregnancy. Obese women were more than three times more likely to miss a meal every day compared to non-obese women. Differences in key health behaviors and nutrition were discovered between non-Hispanic blacks and Hispanics in terms of television watching and exercise practices during pregnancy.

There are several reasons to suspect differences in health behaviors and nutrition between women from different racial-ethnic groups. In a study of the prevalence, trends, and correlates of physical activity in pregnant women from the 1999–2006 National Health and Nutrition Examination Survey (NHANES) data, moderate to vigorous leisure activity (i.e., tasks that caused light or heavy sweating or slight to large increases in breathing or heart rate measured in hours/week) was higher among non-Hispanic whites ($p<0.001$) compared to other racial-ethnic groups.(Evenson & Wen, 2010) Furthermore, the odds for meeting the recommendations for physical activity was higher among non-Hispanic whites compared to other racial-ethnic groups (OR 3.03, 95% CI 1.25–7.37). Another study found that compared to Hispanics, non-Hispanic blacks reported significantly healthier behaviors based on a 48-item instrument that measured health-promoting lifestyles during pregnancy (e.g., smoking, physical activity, and nutrition), $p<0.001$.(Esperat, Du, Yan, & Owen, 2007) One study found a trend towards greater health behavior scores in Hispanics compared to non-Hispanics ($p=0.07$). (Vonderheid et al., 2007) The findings from the current study suggest that differences in health behaviors were dependent upon the woman's weight, which was not reported or addressed in the latter three studies. Similarly, there is also evidence to support differences in health behaviors among pregnant women with varying body mass indices. Self-reported dietary information at 26–28 weeks' gestation using a modified Block food-frequency questionnaire was described in women categorized by their pre-pregnancy body mass index. As body mass index increased, the proportion of grain and fruit servings and the number of women meeting the Institute of Medicine suggested meal pattern (i.e., three meals with two snacks daily) decreased ($p<0.05$) and the proportion of women who consumed less than the average daily requirements for iron and folate was highest for obese women ($p<0.001$). (Laraia, Bodnar, & Siega-Riz, 2007) Furthermore, obesity was associated with a 76% increased odds (OR 1.76, 95% CI 1.24–2.49) of falling into the lowest diet quality after controlling for pre-pregnancy vitamin use and vigorous leisure activity.(Laraia et al., 2007) It is important to note that the majority of the participants in this study were non-Hispanic whites. Although the current study did not find differences between obese vs. non-obese women with respect to specific food groups, it was more common for obese women to miss a meal compared to non-obese women which also implies differences in diet quality.

Although behavioral weight-loss interventions outside of pregnancy frequently do not report results by ethnicity, non-Hispanic black women lose considerably less weight than women in other ethnic groups.(Blanchard, 2009; Fitzgibbon et al., 2012) However, non-Hispanic, non-pregnant blacks who participated in weight loss interventions with cultural adaptations (e.g., Diabetes Prevention Project, Steps to Soulful Living) lost more weight.(Fitzgibbon et al., 2012; Hamman et al., 2006; Karanja, Stevens, Hollis, & Kumanyika, 2002) For example, women in the intense intervention arm of the Diabetes Prevention Project lost more weight (-4.5 ± 5.1 kg) than the average quoted weight loss for behavioral interventions (3 kg).

(Hamman et al., 2006) This suggests that adaptations specific to racial-ethnic differences may improve weight loss outcomes in these women. Given the combination of increasing racial-ethnic diversity in the United States, increasing gestational weight gain across populations, and the obesity epidemic, there is a need to understand the relationship between race-ethnicity, obesity, and gestational weight gain.

There are several limitations to this study. Participants may under-report and over-report negative and positive health behaviors, respectively; however, there was no assumption that one weight or race-ethnicity group was more likely to do so; as such there would be a minimal impact on the effect size. The sample size was based on the original study which aimed to evaluate patient knowledge of the risks of maternal obesity and to compare knowledge between non-obese and obese women.(Kominiarek, Vonderheid, et al., 2010) A larger sample size from several locations could further investigate the health behavior differences found among the body mass index categories and racial-ethnic groups. The racial-ethnic composition of the sample represents the demographics of women who receive prenatal care at the university clinic (54% non-Hispanic blacks, 30% Hispanics). A comparison group of non-Hispanic whites was not statistically feasible given the small sample of women recruited from this group (n=6). The median gestational age at the interview was 13.6 weeks, suggesting that most women started prenatal care by the beginning of the second trimester. For the 5% of women who started prenatal care in the third trimester, their responses to behaviors prior to pregnancy may have been subject to greater recall bias and the later gestational age may have attenuated their reported exercise behaviors compared to those at earlier gestational ages. The impact on the overall study findings was likely minimal. The study is primarily generalizable to low income minority women, but this is a vulnerable population with respect to adverse pregnancy outcomes and worthy of greater attention.

Implications for Practice and/or Policy

Interventions for gestational weight gain may have greater success if they considered both the participants' body mass index and these racial-ethnic differences in health behaviors, especially those related to exercise. Interventions that also aim to improve the overall diet quality with an emphasis on the frequency of meals and healthy snack options are also needed. The potential barriers that obese minority women face with respect to improving health behaviors during a time that they are considered most receptive to change are also important to investigate in future studies.

Acknowledgments

This research was supported by Grant Number K12HD055892 from the NICHD and NIH Office of Research on Women's Health (ORWH) and by the University of Illinois at Chicago (UIC) Center for Clinical and Translational Science (CCTS), Award Number UL1RR029879 from the National Center for Research Resources.

References

Blanchard SA. Variables associated with obesity among African-American women in Omaha. *Am J Occup Ther.* 2009; 63(1):58–68. [PubMed: 19192728]

- Campbell F, Johnson M, Messina J, Guillaume L, Goyder E. Behavioural interventions for weight management in pregnancy: a systematic review of quantitative and qualitative data. *BMC Public Health*. 2011; 11:491.10.1186/1471-2458-11-491 [PubMed: 21696589]
- Chu SY, Kim SY, Lau J, Schmid CH, Dietz PM, Callaghan WM, Curtis KM. Maternal obesity and risk of stillbirth: a metaanalysis. *Am J Obstet Gynecol*. 2007; 197:223–228.10.1016/j.ajog.2007.03.027 [PubMed: 17826400]
- Claesson IM, Sydsjö G, Brynhildsen J, Cedergren M, Jeppsson A, Nyström F, Josefsson A. Weight gain restriction for obese pregnant women: a case-control intervention study. *BJOG*. 2008; 115:44–50.10.1111/j.1471-0528.2007.01531.x [PubMed: 17970795]
- Dietary Guidelines for Americans. Washington, D.C: U.S. Government Printing Office; 2010.
- Dodd JM, Grivell RM, Crowther Ca, Robinson JS. Antenatal interventions for overweight or obese pregnant women: a systematic review of randomised trials. *BJOG*. 2010; 117:1316–1326.10.1111/j.1471-0528.2010.02540.x [PubMed: 20353459]
- Esperat C, Du F, Yan Z, Owen D. Health behaviors of low-income pregnant minority women. [Comparative Study]. *West J Nurs Res*. 2007; 29(3):284–300.10.1177/0193945906295532 [PubMed: 17420521]
- Evenson KR, Wen F. National trends in self-reported physical activity and sedentary behaviors among pregnant women: NHANES 1999–2006. [Research Support, Non-U.S. Gov't]. *Prev Med*. 2010; 50(3):123–128.10.1016/j.ypmed.2009.12.015 [PubMed: 20053370]
- Fitzgibbon ML, Tussing-Humphreys LM, Porter JS, Martin IK, Odoms-Young A, Sharp LK. Weight loss and African-American women: a systematic review of the behavioural weight loss intervention literature. *Obes Rev*. 2012; 13:193–213.10.1111/j.1467-789X.2011.00945.x [PubMed: 22074195]
- Flegal KM, Carroll MD, Kit BK, Ogden CL. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999–2010. [Comparative Study]. *JAMA*. 2012; 307(5):491–497.10.1001/jama.2012.39 [PubMed: 22253363]
- Guelinckx I, Devlieger R, Mullie P, Vansant G. Effect of lifestyle intervention on dietary habits, physical activity, and gestational weight gain in obese pregnant women: a randomized controlled trial. *Am J Clin Nutr*. 2010; 91:373–380.10.3945/ajcn.2009.28166 [PubMed: 19955397]
- Gunatilake RP, Perlow JH. Obesity and pregnancy: clinical management of the obese gravida. *Am J Obstet Gynecol*. 2011; 204:106–119.10.1016/j.ajog.2010.10.002 [PubMed: 21284965]
- Hamman RF, Wing RR, Edelstein SL, Lachin JM, Bray GA, Delahanty L, Wylie-Rosett J. Effect of weight loss with lifestyle intervention on risk of diabetes. [Randomized Controlled Trial, Research Support, N.I.H., Extramural, Research Support, Non-U.S. Gov't, Research Support, U.S. Gov't, P.H.S.]. *Diabetes Care*. 2006; 29(9):2102–2107.10.2337/dc06-0560 [PubMed: 16936160]
- Harelick L, Viola D, Tahara D. Preconception health of low socioeconomic status women: assessing knowledge and behaviors. *Womens Health Issues*. 2011; 21(4):272–276.10.1016/j.whi.2011.03.006 [PubMed: 21602055]
- Karanja N, Stevens VJ, Hollis JF, Kumanyika SK. Steps to soulful living (steps): a weight loss program for African-American women. [Comparative Study, Research Support, U.S. Gov't, P.H.S.]. *Ethn Dis*. 2002; 12(3):363–371. [PubMed: 12148707]
- Kominiarek MA, Vanveldhuisen P, Hibbard J, Landy H, Haberman S, Learman L, Zhang J. The maternal body mass index: a strong association with delivery route. [Research Support, N.I.H., Intramural, Research Support, U.S. Gov't, P.H.S.]. *Am J Obstet Gynecol*. 2010; 203(3):264, e261–267.10.1016/j.ajog.2010.06.024 [PubMed: 20673867]
- Kominiarek MA, Vonderheid S, Endres LK. Maternal obesity: do patients understand the risks? [Comparative Study]. *J Perinatol*. 2010; 30(7):452–458.10.1038/jp.2010.52 [PubMed: 20410907]
- Laraia BA, Bodnar LM, Siega-Riz AM. Pregravid body mass index is negatively associated with diet quality during pregnancy. [Research Support, N.I.H., Extramural]. *Public Health Nutr*. 2007; 10(9):920–926.10.1017/S1368980007657991 [PubMed: 17381955]
- Myles TD, Gooch J, Santolaya J. Obesity as an independent risk factor for infectious morbidity in patients who undergo cesarean delivery. *Obstet Gynecol*. 2002; 100:959–964. [PubMed: 12423861]
- National Health and Nutrition Examination Survey 2003–2004. 2005. Available at: http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/questexam03_04.htm

- Oteng-Ntim E, Varma R, Croker H, Poston L, Doyle P. Lifestyle interventions for overweight and obese pregnant women to improve pregnancy outcome: systematic review and meta-analysis. [Meta-Analysis, Research Support, Non-U.S. Gov't, Review]. BMC Med. 2012; 10:47.10.1186/1741-7015-10-47 [PubMed: 22574949]
- Phelan S, Phipps MG, Abrams B, Darroch F, Schaffner A, Wing RR. Randomized trial of a behavioral intervention to prevent excessive gestational weight gain: the Fit for Delivery Study. Am J Clin Nutr. 2011; 93:772–779.10.3945/ajcn.110.005306.1 [PubMed: 21310836]
- Polley BA, Wing RR, Sims CJ. Randomized controlled trial to prevent excessive weight gain in pregnant women. Int J Obes. 2002; 26:1494–1502.10.1038/sj.ijo.0802130
- Quinlivan JA, Lam LT, Fisher J. A randomised trial of a four-step multidisciplinary approach to the antenatal care of obese pregnant women. Aust N Z J Obstet Gynaecol. 2011; 51:141–146.10.1111/j.1479-828X.2010.01268.x [PubMed: 21466516]
- Stothard KJ, Tennant PWG, Bell R, Rankin J. Maternal overweight and obesity and the risk of congenital anomalies: a systematic review and meta-analysis. JAMA. 2009; 301:636–650.10.1001/jama.2009.113 [PubMed: 19211471]
- Vonderheid SC, Norr KF, Handler AS. Prenatal health promotion content and health behaviors. West J Nurs Res. 2007; 29:258–276. [PubMed: 17420520]
- Wang Y, Beydoun MA. The obesity epidemic in the United States--gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. [Meta-Analysis Research Support, N.I.H., Extramural Research Support, U.S. Gov't, Non-P.H.S.Review]. Epidemiol Rev. 2007; 29:6–28.10.1093/epirev/mxm007 [PubMed: 17510091]
- Weiss JL, Malone FD, Emig D, Ball RH, Nyberg Da, Comstock CH, D'Alton ME. Obesity, obstetric complications and cesarean delivery rate--a population-based screening study. Am J Obstet Gynecol. 2004; 190:1091–1097.10.1016/j.ajog.2003.09.058 [PubMed: 15118648]
- Wolff S, Legarth J, Vangsgaard K, Toubro S, Astrup A. A randomized trial of the effects of dietary counseling on gestational weight gain and glucose metabolism in obese pregnant women. Int J Obes. 2008; 32:495–501.10.1038/sj.ijo.0803710
- Youth Risk Behavior Survey. 2005. Available at: www.cdc.gov/yrbs

Biography

Dr. Michelle A. Kominiarek, MD is an Assistant Professor of Obstetrics and Gynecology at the University of Illinois at Chicago. Her primary research interests relate to health behaviors, gestational weight gain, and adverse perinatal outcomes in obese pregnant women.

Michelle A. Kominiarek, MD had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Table 1

Demographics in Obese vs. Non-Obese and Non-Hispanic blacks vs. Hispanics

Variable n(%) or mean (SD)	Obese n=42	Non-Obese n=52	p value	Non-Hispanic blacks n=67	Hispanic n=27	p value
Age (years)	27.5±4.9	26.1±6.7	0.24	26.0±5.3	28.4±7.3	0.13
Race						
Non-Hispanic black	30(71.4)	37(71.1)	0.98	--	--	--
Hispanic	12(28.6)	15(28.9)				
Born in the United States	38(90.5)	46(88.5)	0.74	67(100)	17(63.0)	<0.001
Insurance						
Medicaid	28(66.7)	39(75.0)	0.49	50(74.6)	17(63.0)	0.13
Private	12(28.5)	12(23.1)		14(20.9)	10(37.0)	
Other	2(4.8)	1(1.9)		3(4.4)		
Education						
< 12 years	6(14.3)	14(26.9)	0.06	13(19.4)	7(25.9)	0.74
Completed 12 years	19(45.2)	12(23.1)		22(32.8)	9(33.3)	
> 12 years	17(40.5)	26(50.0)		32(47.8)	11(40.7)	
Married*	13(31.7)	12(23.1)	0.35	13(19.7)	12(44.4)	0.01
Employed outside of home*	26(61.9)	16(38.1)	0.21	33(50.0)	18(66.7)	0.14
Annual household expenses						
\$30,000	25(59.5)	25(48.1)	0.24	38(56.7)	12(44.4)	0.41
>\$30,000	9(21.4)	9(17.3)		13(19.4)	5(18.5)	
Unknown	8(19.0)	18(34.6)		16(23.9)	10(37.0)	
Nullipara	8(19.0)	20(38.5)	0.04	18(26.9)	10(37.0)	0.33
Gestational age at first visit (weeks)	14.7±6.9	15.4±6.4	0.61	15.0±6.5	15.3±6.8	0.85
Planned pregnancy	8(19.0)	12(23.1)	0.63	8(11.9)	12(44.4)	<0.001

Variable n(%) or mean (SD)	Obese n=42	Non-Obese n=52	p value	Non-Hispanic blacks n=67	Hispanic n=27	p value
Pre-pregnancy body mass index (kg/m ²)	36.8±5.5	24.1±2.7	<0.001	29.9±8.1	29.4±6.2	0.77

*There is one response missing from each of these variables.

Table 2

Smoking and Physical Activity Behaviors by Body Mass Index and Race-Ethnicity

Variable n(%)	Obese n=42	Non-Obese n=52	p-value	Obese non-Hispanic blacks n=30	Obese Hispanics n=12	p-value	Non-Obese Non-Hispanic Blacks n=37	Non-Obese Hispanics n=15	p-value
Ever smoked cigarettes	13(31.0)	13(25.0)	0.52	8(26.7)	5(41.7)	0.46	7(18.9)	6(40.0)	0.16
Watch 3 hours television per day	28(66.7)	39(75.0)	0.37	22(73.3)	6(50.0)	0.17	31(83.8)	8(53.3)	0.03
Did not exercise before pregnancy	14(33.3)	17(32.7)	0.95	7(23.3)	7(58.3)	0.07	14(37.8)	3(20.0)	0.33
Exercised before pregnancy to lose weight	26(61.9)	25(48.1)	0.18	20(66.7)	6(50.0)	0.48	15(40.5)	10(66.7)	0.09
Exercising less often during pregnancy*	19(45.2)	26(50.0)	0.52	16(53.3)	3(25.0)	0.10	15(40.5)	11(73.3)	0.048

* There are two responses missing from this variable.

Table 3

Nutrition and Dietary Behaviors by Body Mass Index and Race-Ethnicity

Variable n(%)	Obese n=42	Non-Obese n=52	p-value	Obese non-Hispanic blacks n=30	Obese Hispanics n=12	p-value	Non-Obese Non-Hispanic Blacks n=37	Non-Obese Hispanics n=15	p-value
Took any diet pills before pregnancy	9(21.4)	5(9.6)	0.11	6(20.0)	3(25.0)	0.70	3(8.1)	2(13.3)	0.62
Poor or fair self- description of nutrition	15(35.7)	8(15.4)	0.02	9(30.0)	6(50.0)	0.29	5(13.5)	3(20.0)	0.68
Nutrition improved during pregnancy	15(36.6)	27(51.9)	0.14	8(27.6)	7(58.3)	0.08	17(46.0)	10(66.7)	0.17
Took folic acid prior to pregnancy	6(14.3)	7(13.5)	0.91	3(10.0)	3(25.0)	0.33	3(8.1)	4(26.7)	0.17
Took MVI prior to pregnancy *	10(24.4)	10(19.2)	0.55	8(27.6)	2(16.7)	0.69	6(16.2)	4(26.7)	0.45

MVI multivitamin

* There is one response missing from this variable.

Table 4

Nutrition Recall^a by Body Mass Index and Race-Ethnicity

Variable n(%)	Obese n=42	Non-Obese n=52	p-value	Obese non-Hispanic blacks n=30	Obese Hispanics n=12	p-value	Non-Obese Non-Hispanic Blacks n=37	Non-Obese Hispanics n=15	p-value
Drank milk or milk foods	18(42.9)	31(59.6)	0.11	10(33.3)	8(66.7)	0.049	22(59.5)	9(60.0)	0.97
Ate fruit or drank 100% fruit juice	18(42.9)	26(50.0)	0.49	11(36.7)	7(58.3)	0.20	18(48.6)	8(53.3)	0.76
Drank soda or other sweetened drinks	11(26.2)	18(34.6)	0.38	9(30.0)	2(16.7)	0.46	15(40.5)	3(20.0)	0.16
Ate meat, eggs, or beans	24(57.1)	27(51.9)	0.61	18(60.0)	6(50.0)	0.55	19(51.3)	8(53.3)	0.90
Ate vegetables	15(35.7)	20(38.5)	0.78	11(36.7)	4(33.3)	1.0	15(40.5)	5(33.3)	0.63
Ate grains like bread	21(50.0)	28(53.8)	0.71	15(50.0)	6(50.0)	1.0	20(54.0)	8(53.3)	0.96
Ate hamburgers, hot dogs, pizza, etc.	1(2.4)	3(5.8)	0.63	1(3.3)	0	1.0	3(8.1)	0	0.55
Ate sweetened foods like cake, cookies, etc.	6(14.3)	12(23.1)	0.28	3(10.0)	3(25.0)	0.33	10(27.0)	2(13.3)	0.47
Ate potato chips, corn chips, etc.	4(9.8)	12(23.1)	0.09	4(13.8)	0	0.30	11(29.7)	1(6.7)	0.14
Missed a meal	9(21.4)	3(5.9)	0.03	6(20.0)	3(25.0)	0.70	3(8.1)	0	0.55
Never ate less to lose or keep from gaining weight	35(83.3)	46(90.2)	0.33	25(83.3)	10(83.3)	1.0	33(91.7)	13(86.7)	0.62

^aParticipants responded to the following question: "The next questions are about the food you ate or drank over the past week. How many days over the past week did you...?" The response categories were 0-7 with 7 representing an occurrence every day in the past week. For purposes of analysis, responses were categorized into 7 vs. <7.