

# **Comparisons in Perceived Importance of and Needs for Maternal Gestational Weight Information Between African American and Caucasian Pregnant Women**

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## **Abstract**

This study compared the perceived importance of and needs for maternal gestational weight information between African-American and Caucasian pregnant women. A secondary analysis of data from 113 pregnant women (82 African-American and 31 Caucasian) attending an inner-city prenatal clinic was conducted for this study. Perceived importance of and needs for information were measured in five areas: nutrition, prenatal vitamins, rest/activity balance, exercise, and appropriate weight gain. African-American women demonstrated significantly higher perceived importance of and needs for information on rest/activity balance and appropriate weight gain than Caucasian women. Exercise information was rated lower in importance but was most needed by both African-American and Caucasian women. Education programs about maternal gestational weight need to be cognizant of ethnic women's needs.

## **Key Words:**

Gestational weight, information needs, disparity, prenatal education, health literacy

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## Comparisons in Perceived Importance of and Needs for Maternal Gestational Weight Information between African-American and Caucasian Pregnant Women

In response to the current obesity epidemic, researchers have begun to examine excessive maternal gestational weight gain and its impacts on maternal and child health. A recent study based on 2004-2005 Pregnancy Risk Assessment Monitoring System data from more than 60,000 women with single, full-term births in 26 U.S. states found that 30%-44% of the women, across ethnic groups, were overweight or obese when they began pregnancy (Chu, Callaghan, Bish, & D'Angelo, 2009). In that study, about 60% of overweight/obese women gained excessive weight during pregnancy, and 40% of normal-weight women gained more than the maximum recommendation of 35 pounds. Furthermore, although overweight/obesity was more prevalent at the beginning of pregnancy in African-American than in Caucasian women, by the end of pregnancy, more Caucasian (39.3%) than African-American women (33.3%) had gained 35 pounds or more.

Excessive maternal gestational weight gain causes complications such as large-for-gestational-age babies, macrosomia, and maternal postpartum weight retention (Siega-Riz et al., 2009). Excessive maternal gestational weight gain also increases the offspring's risk for future obesity (Oken, Taveras, Kleinman, Rich-Edwards, & Gillman, 2007). It is critical that care providers and health educators teach pregnant women about gestational weight issues. Effective patient teaching about gestational weight requires knowledge of what information a pregnant woman wants. However, the weight-related informational needs of pregnant women, including the effects of selected socio-cultural factors on those needs, have not been addressed empirically. The purpose of this study was to compare the perceived importance of and needs for maternal gestational weight information between African-American and Caucasian pregnant women.

*Literature Review*

The Institute of Medicine (IOM, 2009) recently updated its gestational weight gain guidelines. According to the guidelines, underweight women (pre-pregnancy body mass index (BMI) < 18.5) should strive for a gestational weight gain of 28 to 40 pounds. Normal-weight women (pre-pregnancy BMI = 18.5-24.9) should gain 25 to 35 pounds during pregnancy, overweight women (pre-pregnancy BMI = 25.0-29.9) 15 to 25 pounds, and obese women (pre-pregnancy BMI  $\geq$  30.0) 11 to 20 pounds.

Proper gestational weight gain is important for healthy fetal growth. Too little or too much weight gain during pregnancy have been associated with risk for pregnancy complications and adverse infant outcomes. For instance, pregnant women who gain less than 22 pounds by 38 weeks of gestation are 2.5 times as likely to have spontaneous preterm births as women who have adequate gestational weight gains of 22-44 pounds (Stotland, Caughey, Lahiff, & Abrams, 2006). Research on maternal gestational weight has been traditionally focused on inadequate weight gain; due to the current global trend of obesity among women and children, research has shifted toward examining the effects of excessive maternal gestational weight gain on pregnancy and infant outcomes (Siega-Riz & Laraia, 2006). To date, numerous studies have found that gaining more than the IOM recommended gestational weight in pregnant women of any BMI category is linked to preeclampsia, hypertensive pregnancy, failed induction, cesarean section, large-for-gestational-age babies, and maternal impaired glucose tolerance (DeVader, Neeley, Myles, & Leet, 2007; Fortner, Pekow, Solomon, Markenson, & Chasan-Taber, 2009; Herring et al., 2009; Hillier et al., 2009). Excessive gestational weight gain in the mother creates a uterine environment in which the baby is exposed to developmental overnutrition, the adverse effects of which may continue even after birth. For example, a recent cohort study found that excessive

maternal gestational weight gain increases the offspring's risk of obesity and hypertension when the offspring reaches the age of 21 (Mamun et al., 2009).

Because maternal gestational weight gain is associated with pregnancy and infant outcomes, it is necessary for care providers and health educators to teach pregnant women about proper weight gain and how to achieve that goal. Two issues, however, are often overlooked by care providers and health educators when they develop prenatal education programs.

First, previous research has shown many pregnant women receive prenatal health information that they do not want and information they do want is not offered by care providers or health educators (Collins, 2007). Matching provided content with desired information increases the likelihood that learning will result in attitude or behavior change (Soltani & Dickinson, 2005). The American College of Obstetricians and Gynecologists (2005) and the American Dietetic Association (2008) recommend a lifestyle approach, including nutrition and physical activity education, when teaching and counseling pregnant women about proper gestational weight gain. However, though some intervention studies have provided evidence for the effectiveness of this approach for achieving proper gestational weight gain, others have reported mixed results, possibly because the specific information needs of some pregnant women do not match the information given by the researchers (Asbee, 2009; Olson, Strawderman, & Reed, 2004; Polley, Wing, & Sims, 2002; Wolff, Legarth, Vangsgaard, Toubro, & Astrup, 2008). Identifying what information about gestational weight pregnant women perceive as important and desire to obtain may lead to more effective interventions in this population.

Second, several researchers have found that ethnicity influences what prenatal health promotion information pregnant women discuss with their care providers (Vonderheid, Montgomery, & Norr, 2003). Culturally specific values and beliefs may influence whether a

woman perceives certain health information as important or needed. Using the PEN-3 health education theoretical model in a study to explore nutrition-related attitudes and beliefs among African Americans, Delores and James (2004) found that study participants believed “most African Americans lack the information to consistently make healthful food choices” (p. 359), but “several perceived eating healthfully as giving up part of their cultural heritage” (p. 357). That finding implies that information given to people to change their eating behavior may need to be delivered in a form that is perceived as useful within their cultural milieu.

In summary, proper gestational weight gain in pregnant women is important for both a healthy pregnancy and infant outcomes. Prenatal education programs need to offer pregnant women information related to gestational weight issues that is seen by the pregnant woman as being important and needed. Both African-American and Caucasian pregnant women are at risk of gaining more than the IOM recommended gestational weight, but it is not clear if their needs for maternal gestational weight information are the same. Therefore, this study compared the perceived importance of and needs for maternal gestational weight information between African-American and Caucasian pregnant women.

### *Methods*

#### *Study Design*

Secondary analysis of data from a parent study that investigated the health information-seeking behavior of pregnant women was conducted to address the purpose of this study, specifically to compare the perceived importance of and needs for maternal gestational weight information between African-American and Caucasian pregnant women. Study approval was obtained from the human subjects review board of Indiana University.

The parent study used the Pregnancy Health Information Needs Scale to measure

pregnant women's information needs for 20 pregnancy health topics regarding health promotion, risk detection and prevention, and physical and psychosocial adaptation to pregnancy (Shieh, McDaniel, & Ke, 2009). Of these 20 pregnancy health topics, five (nutrition, prenatal vitamins, rest/activity balance, exercise, appropriate weight gain) were selected for further analysis in this study based on their potential influences on gestational weight gain and their relevance to the lifestyle approach recommended by the American College of Obstetricians and Gynecologists (2005) and the American Dietetic Association (2008).

#### *Setting, Participants, and Procedure*

Participants were recruited from a prenatal clinic in the U.S. Midwest. The clinic was part of a county health care system serving women who were either receiving government-sponsored health insurance or did not have insurance. The clinic staff included obstetricians, residents, nurses, a health educator, nurse midwives, registered dietitians, and social workers. We did not collect data on who the primary care provider was in the clinic for each woman. The health educator in the clinic provided group prenatal education during the first prenatal visit and other providers offered individual patient teaching when needed.

A recruitment flyer was inserted in each prenatal education package given to all pregnant women by the clinic health educator to make the women aware of the study. Recruitment flyers were also posted on the doors of each patient exam room in the clinic. Subject criteria included being pregnant, at least 18 years of age, and English-speaking/reading. Pregnant women who were interested in study participation could contact the study by phone or talk to a research assistant in the clinic. Pregnant women who met the inclusion criteria and were willing to participate in the study signed consent forms and then were interviewed before or after they were seen by a care provider. A gift card worth \$20 was given to pregnant women who had completed

the study.

Of the English-speaking pregnant women served by this clinic, 90% were either African-American or Caucasian, with an African-American-to-Caucasian ratio of 3 to 2. About 10% of the women in the parent study either declined the invitation to participate or did not have complete data. The parent study included 87 African-American and 35 Caucasian pregnant women. Of these, 5 African Americans and 4 Caucasians did not have the complete data needed for this secondary analysis and they were excluded in the analysis. The total number of participants analyzed in this study, therefore, was 113 with 82 African Americans and 31 Caucasians.

### *Measures*

*Demographic and obstetric information.* The Subject Profile Data Form was used to collect demographic data and obstetric history from the participants.

*Perceived importance of maternal gestational weight information.* Five information topics related to gestational weight contained within the Pregnancy Health Information Needs Scale were used to assess perceived importance. Participants were asked how important it was for them during pregnancy to receive information about nutrition, prenatal vitamins, rest/activity balance, exercise, and appropriate weight gain. Participants could respond *definitely not important, not important, not sure, important, or definitely important*. During data analysis, a score of 1 to 5 was assigned to each response option, with 5 representing *definitely important*.

*Needs for maternal gestational weight information.* Participants were asked how much they agreed or disagreed with five statements that described whether they needed more information in five respective information areas related to gestational weight: nutrition, prenatal vitamins, rest/activity balance, exercise, and appropriate weight gain during pregnancy.

Participants could respond *disagree very much, disagree, no opinion, agree, and agree very*

*much*. During data analysis, a score of 1 to 5 was assigned to correspond with these responses, with 5 being *agree very much*.

*Barriers to information-seeking.* The Barriers to Information Access Scale (Arora et al., 2002; Cronbach's alpha reported as .80) was used to assess if participants had difficulty finding health information. Barriers to information-seeking was not a major outcome variable of this study. This information was collected in order to understand the characteristics of study participants. Pregnant women in this study were asked how much they disagreed or agreed with three statements in the Barriers to Information Access Scale that described difficulty accessing information respectively due to lack of knowledge about how to obtain the information, lack of time and effort, and inability to pay for the needed information. This scale had a 1 to 5 Likert-type format, with 5 being assigned to the response of *agree very much*. This scale had acceptable internal reliability (Cronbach's alpha = .73) in this sample.

*Health literacy.* Health literacy information was collected from pregnant women as part of participant characteristics. The Short Test of Functional Health Literacy in Adults or STOFHLA (Nurss, Parker, & Baker, 1995) measured two attributes of health literacy: reading and comprehension. Participants needed to choose a correct word from a list of four in order to fill in blank areas in the written messages. A total of 36 blank areas were in the STOFHLA and a score of 1 was given if a correct word was chosen. The STOFHLA was administered in a standardized length of 7 minutes and the time for each participant to complete the STOFHLA was recorded. The STOFHLA's internal consistency was excellent (Cronbach's alpha = .92 in this sample).

#### *Data analysis*

Sample characteristics and variable distributions were described using means, standard

deviations, frequencies, and percentages, depending on level of measurement. Student's *t* test was used to compare perceived importance of and perceived needs for maternal gestational weight information, as well as other continuous variables between African-American and Caucasian pregnant women. Similarity of nominal variable distributions between African-American and Caucasian pregnant women was tested using the Chi Square statistic. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS 17.0) software and the level of significance was set at .05.

### *Results*

#### *Demographic and Obstetric Characteristics*

Table 1 shows the sample characteristics. A total of 113 pregnant women were included in this study, 82 (73%) African-American and 31 (27%) Caucasian. African-American and Caucasian women were not significantly different in mean age, years of education, gestational weeks at interview, gestation weeks when began prenatal care, and the total number of pregnancies experienced. Most in both groups were not married, not employed, not in first pregnancy at the interview, and enrolled in the WIC program. No statistically significant differences were found in health literacy, time needed to complete the STOFHLA or barriers to information-seeking between these two groups of women.

#### *Perceived Importance of and Needs for Information*

Mean scores of perceived importance and needs related to the five information topics ranged from 3.23 to 4.70 in both groups of women (See Table 2). A general trend was observed in which mean scores of needs were more likely to be lower than mean scores of perceived importance. Among African-American pregnant women, information topics ranked from the highest to the lowest based on mean scores of perceived importance were nutrition, prenatal

vitamins, rest/activity balance, appropriate weight gain, and exercise; however, topic rankings were reversed for information needs, with exercise information being the most needed followed by rest/activity balance, appropriate weight gain, nutrition, and prenatal vitamins. Caucasian women had a slightly different pattern of discrepancy between topic importance and need ratings. As with African-Americans, Caucasian women perceived nutrition and prenatal vitamins as most important followed by rest/activity balance, exercise, and appropriate weight gain. The topics rated highest in terms of need for information, however, were exercise followed by nutrition, rest/activity balance, appropriate weight gain, and prenatal vitamins.

African-American pregnant women demonstrated significantly higher perceived importance mean scores than Caucasian pregnant women on three of the five maternal gestational weight information topics: nutrition, rest/activity balance, and appropriate weight gain (Table 2). The pattern of differences for needs was slightly dissimilar to that observed for perceived importance. African-American women reported significantly higher need mean scores for rest/activity balance, appropriate weight gain, and exercise.

### *Discussion*

This study used secondary data to compare African-American and Caucasian pregnant women in perceived importance of and needs for information related to maternal gestational weight, including nutrition, prenatal vitamins, rest/activity balance, exercise, and appropriate weight gain during pregnancy.

In general, the five information topics in this study were perceived by African-American and Caucasian pregnant women as both important and needed. Information on all of these topics is likely to be useful to the women in a prenatal education program. Mean scores for needs in this study, however, were lower than those for perceived importance, indicating that a pregnant

women may think that it is important for her to know about an information topic, but in reality she may not need much more information about the topic. A possible explanation for this difference could be that pregnant women in this study were, on average, in their 26<sup>th</sup> to 28<sup>th</sup> weeks of gestation (beginning of the third trimester). By this time, they might have already received some information about the five gestational weight-related topics and therefore their needs for receiving further information were reduced. Moreover, most women in this study were not in their first pregnancy. Multiparous women in a previous study reported relatively more knowledge about pregnancy and childbirth (Collin, 2007). Having had previous childbearing experiences might have contributed to the reduced information needs of some women in this study. Future research may investigate gestational weight information needs of primigravidas or study such needs of pregnant women during their earlier pregnancy.

It was intriguing to find that both African-American and Caucasian pregnant women viewed exercise during pregnancy as least important in comparison to other topics, but they reported needing exercise information the most. Several previous studies have found that physical activity, including exercise, gradually reduces as pregnancy progresses (Guelinckx, Devlieger, Mullie, & Vansant, 2010; Poudevigne & O'Connor, 2005). Endacott (1997) asserted that needs arise in response to changes in the person/situation, perhaps body changes in size and shape prompted the women in this study to want to know more about how to exercise safely during the remaining pregnancy. Previous research shows that care providers do not routinely talk to pregnant women about exercise during pregnancy (Entin & Munhall, 2006). Our study did not ask participants if their care providers or health educators had offered them exercise information. However, it is likely that pregnant women would want to know more about exercise during pregnancy if they have not been given such information by their care providers or health

educators.

Another finding from this study was that African-American pregnant women perceived rest/activity balance and appropriate weight gain as relatively more important than Caucasian women and also expressed stronger needs for such information. It is not clear why these differences existed between the two groups of women in this study since they had similar demographic and obstetric characteristics. They also had comparable scores on health literacy and barriers to access health information. Jones (2002) stated that “need is not an absolute concept, but is relative and dependent on socio-economic and cultural factors” (p.56). Our study suggests that there may be differences in information needs between African-American and Caucasian pregnant women although it cannot explain reasons for the differences in rest/activity balance and appropriate weight gain. Could it be that the information had been delivered but was perceived by fewer African-American pregnant women as adequate or culturally relevant? Were there other physical, psychosocial, or information-seeking factors that had influenced women of different races to experience information needs differently? There is a need for further research on gestational weight gain-specific cultural beliefs. We also suggest that future research should examine if pre-pregnancy BMI and the amount of gestational weight gain influence information needs, particularly for rest/activity and appropriate weight gain in different racial groups. Future research can also investigate differences between African-American and Caucasian pregnant women in information sources used to find gestational weight-related information, levels of knowledge about gestational weight, as well as perceptions of desirable gestational weight gain.

#### *Study Limitations*

Due to inherent limitations in the secondary data analysis method, information such as weight, height, body mass index, actual gestational weight gain, and other pertinent information

were not available for analysis. Such information could have provided a gestational weight profile of the studied women, as well as could have potentially influenced how pregnant women viewed health information related to gestational weight. Maternal gestational weight information included in this study was limited to the five topics selected from the Pregnancy Health Information Needs Scale in the parent study. Other related information topics might have been needed by the pregnant women, but they were not investigated in this study. Participants were recruited from a prenatal clinic serving low income pregnant women, and therefore the study findings cannot be generalized to women in higher income brackets. This study also included only English-speaking/reading pregnant women. Women who do not read or speak English might have different perceptions of maternal gestational weight information.

#### *Implications for Practice*

Pregnant women view receiving health information as a type of social support (Timmins, 2006). In light of the current obesity epidemic, offering important and needed maternal gestational weight information to pregnant women is critical not only to enhance their healthy pregnancy but also to make them feel they are being supported. In a general sense, prenatal education about maternal gestational weight gain can include nutrition, prenatal vitamins, rest/activity balance, exercise, and appropriate weight gain. When a pregnant woman advances toward the third trimester, her information needs for how to exercise may become stronger. A booster or tailored education on exercise could be given based on her stage of pregnancy. Prenatal education is likely to be more satisfactory if content is developed with the consideration for a woman's ethnic background. This study found that information on rest/activity balance and appropriate weight gain were most needed by African-American pregnant women. These may be the areas to be particularly emphasized in prenatal health education for African-American

pregnant women. However, care providers and health educators need to be skillful in assessing pregnant women's individual information needs. Asking how pregnant women feel about the importance of an education topic may result in a response that is different from asking her what she needs to learn.

In conclusion, this study compared perceived importance of and needs for maternal gestational weight information between African-American and Caucasian pregnant women. Information on exercise was most needed by both African-American and Caucasian pregnant women. Small but significant between-group differences were found in several areas. Education programs about maternal gestational weight need to be cognizant of ethnic women's needs.

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Table 1. Demographic and Obstetric Characteristics of African-American and Caucasian Pregnant Women (N = 113)

|   | African-American<br>N = 82<br>$\bar{x}$ (SD) | Caucasian<br>N = 31<br>$\bar{x}$ (SD) | p   |
|---|--|---------------------------------------|-----|
| Age   | 25.39 (5.17)                                 | 27.29 (6.01)                          | .10 |
| Education (yrs)                                   | 11.95 (1.66)                                 | 11.74 (1.57)                          | .55 |
| Gestation at interview (wks)                      | 28.10 (8.09)                                 | 26.16 (8.43)                          | .26 |
| Gestation began prenatal care (wks)               | 11.59 (5.87)                                 | 11.29 (5.68)                          | .81 |
| Total pregnancies with current one                | 3.37 (1.45)                                  | 3.44 (1.23)                           | .84 |
| Health literacy                                   | 31.96 (5.31)                                 | 33.52 (4.28)                          | .15 |
| Time to complete health literacy assessment (min) | 4.58 (1.23)                                  | 4.14 (1.28)                           | .10 |
| Barriers to information access                    | 2.35 (.71)                                   | 2.47 (.80)                            | .43 |
|   | n (%)  | n (%)                                 |     |
| Marital status                                    |  |                                       |     |
| Not married                                       | 69 (84%)                                     | 25 (81%)                              | .66 |
| Married   | 13 (16%)                                     | 6 (19%)                               |     |
| Employment  |  |                                       |     |
| No  | 54 (66%)                                     | 23 (74%)                              | .40 |
| Yes   | 28 (34%)                                     | 8 (26%)                               |     |
| First pregnancy                                   |  |                                       |     |
| No  | 59 (72%)                                     | 25 (81%)                              | .35 |
| Yes   | 23 (28%)                                     | 6 (19%)                               |     |
| WIC enrollment                                    |  |                                       |     |
| No  | 32 (39%)                                     | 14 (45%)                              | .55 |
| Yes   | 50 (61%)                                     | 17 (55%)                              |     |

Table 2. Perceived Importance and Needs Regarding Maternal Gestational Weight Information between African-American and Caucasian Pregnant Women

|                         | Perceived Importance               |                             |      | Needs for Information              |                             |      |
|-------------------------|------------------------------------|-----------------------------|------|------------------------------------|-----------------------------|------|
|                         | African-American<br>$\bar{x}$ (SD) | Caucasian<br>$\bar{x}$ (SD) | p    | African-American<br>$\bar{x}$ (SD) | Caucasian<br>$\bar{x}$ (SD) | p    |
| Nutrition               | 4.70 (.49)                         | 4.32 (.91)                  | .04  | 3.63 (1.05)                        | 3.32 (1.05)                 | .16  |
| Prenatal vitamins       | 4.66 (.50)                         | 4.42 (.81)                  | .13  | 3.50 (1.10)                        | 3.23 (1.06)                 | .24  |
| Rest/activity balance   | 4.49 (.50)                         | 4.10 (.75)                  | .002 | 3.91 (.86)                         | 3.32 (1.08)                 | .009 |
| Appropriate weight gain | 4.20 (.74)                         | 3.84 (.90)                  | .03  | 3.76 (1.06)                        | 3.29 (1.04)                 | .04  |
| Exercise                | 3.90 (.83)                         | 3.87 (.85)                  | .86  | 3.95 (.87)                         | 3.48 (1.06)                 | .03  |