



SC PRAMS Special Delivery

Racial Disparities in Pregnancy Planning Among South Carolina Mothers, 2004-2007

Introduction

Pregnancy Risk Assessment Monitoring System (PRAMS) data is often used to examine the intendedness of pregnancies that end in live births. PRAMS Phase V core question 10 is based on a set of questions used by the National Survey of Family Growth and is used to measure pregnancy intendedness. This question reads: “Thinking back to *just before* you got pregnant with your *new* baby, how did you feel about becoming pregnant?”

Mothers who respond that they wanted to be pregnant then or sooner are defined as having *intended* pregnancies; mothers indicating they wanted to be pregnant later are defined as having *mistimed* pregnancies; and mothers reporting they did not want to be pregnant then or at any time in the future are defined as having *unwanted* pregnancies. *Unintended* pregnancies are those pregnancies that were either *mistimed* or *unwanted*.

The pregnancy intendedness concept, however, is complex and difficult to quantify appropriately,¹ especially since it is easily confused with similar concepts such as pregnancy wantedness or pregnancy happiness during and after pregnancy.^{2,3}

Another concept closely related to pregnancy intendedness is pregnancy planning. While pregnancy intendedness is based on preconception feelings and attitudes about becoming pregnant,

pregnancy planning refers to behaviors and actions before a woman became pregnant. That is, pregnancy planning reflects the presence or absence of actions to prevent or avoid pregnancy. A more comprehensive review of these concepts is available elsewhere.⁴

In a previous South Carolina (S.C.) PRAMS Special Delivery Report we used responses to questions 12, 13, and 14 on the S.C. PRAMS Phase V survey (Figure 1; PRAMS phase V core questions 11, 12, and 13) to create a three-category pregnancy planning variable.⁵ This variable codes each pregnancy as a *planned* pregnancy, a

neither planned nor unplanned pregnancy, or an *unplanned* pregnancy. For simplicity, pregnancies that were neither planned nor unplanned will be referred to as *ambivalent* pregnancies. We compared this action-based pregnancy planning variable to the feeling-based pregnancy intendedness variable and found that while just over 52 percent of pregnancies were intended, only 42 percent were planned. A sizable body of research focusing on pregnancy intendedness exists, however relatively few studies focus on pregnancy planning.

What is S.C. PRAMS?

The South Carolina Pregnancy Risk Assessment Monitoring System (S.C. PRAMS) is an ongoing population-based surveillance system of maternal behaviors and experiences before, during and after pregnancy. About 2,300 mothers are randomly sampled from the state’s live birth registry each year.

The data presented in this newsletter reflect live births to South Carolina mothers occurring in South Carolina during the years of 2004 -2007. The overall response rate for these three years was 69.4 percent.

Rates of unintended pregnancy have been shown to vary by maternal race as well as maternal age, education, and household income.⁶ Furthermore, it has been suggested that women’s interpretations of questions aiming to assess pregnancy intendedness may vary by race or ethnicity.⁷ To our knowledge, no population-based studies have examined racial disparities in pregnancy planning. In this report, we seek to investigate the association between race/ethnicity and pregnancy planning among women delivering a live birth in South Carolina from 2004-2007.

Methods

Women who are S.C. residents delivering live born infants in S.C. are eligible to be selected for participation in the PRAMS project. All PRAMS participants are selected through a random sampling of the South Carolina live birth registry, stratified by birth weight.

From 2004-2007, 6,240 mothers completed the S.C. PRAMS survey (weighted response rate: 69.4 percent). The analyses presented in this report were restricted to 5,653 non-Hispanic (NH) white and NH African-American mothers. Additionally, mothers with missing information on pregnancy planning (n=256) or other covariates of interest (n=682) were excluded. This resulted in a total sample of 4,715 women included in the analyses. All data management was done with SAS 9.1.3, and all analyses were conducted with SAS-callable SUDAAN 10.0.

As described above, each mother’s pregnancy was determined to be planned, unplanned, or ambivalent based on her answers to the three questions displayed in Figure 1. The algorithm for defining the pregnancy planning variable is summarized in Figure 2. This algorithm was developed so that only mothers indicating that they were trying to get pregnant were defined as having planned pregnancies, while defining unplanned pregnancies conservatively. Women indicating that they were not trying to get pregnant and were not doing anything to keep from getting pregnant were considered to have ambivalent pregnancies (unless they thought that they could not get pregnant and were then categorized as having unplanned pregnancies).

Bivariate associations between maternal race (NH white and NH African-American) and pregnancy

Figure 1: Questions used in the calculation of the pregnancy planning variable

12. When you got pregnant with your new baby, were you trying to get pregnant?

No Yes →

13. When you got pregnant with your new baby, were you or your husband or partner doing anything to keep from getting pregnant?
(Some things people do to keep from getting pregnant include not having sex at certain times [rhythm] or withdrawal, and using birth control methods such as the pill, condoms, cervical ring, IUD, having their tubes tied, or their partner having a vasectomy.)

No Yes →

14. What were your or your husband’s or partner’s reasons for not doing anything to keep from getting pregnant?

I didn’t mind if I got pregnant

I thought I could not get pregnant at that time

I had side effects from the birth control method I was using

I had problems getting birth control when I needed it

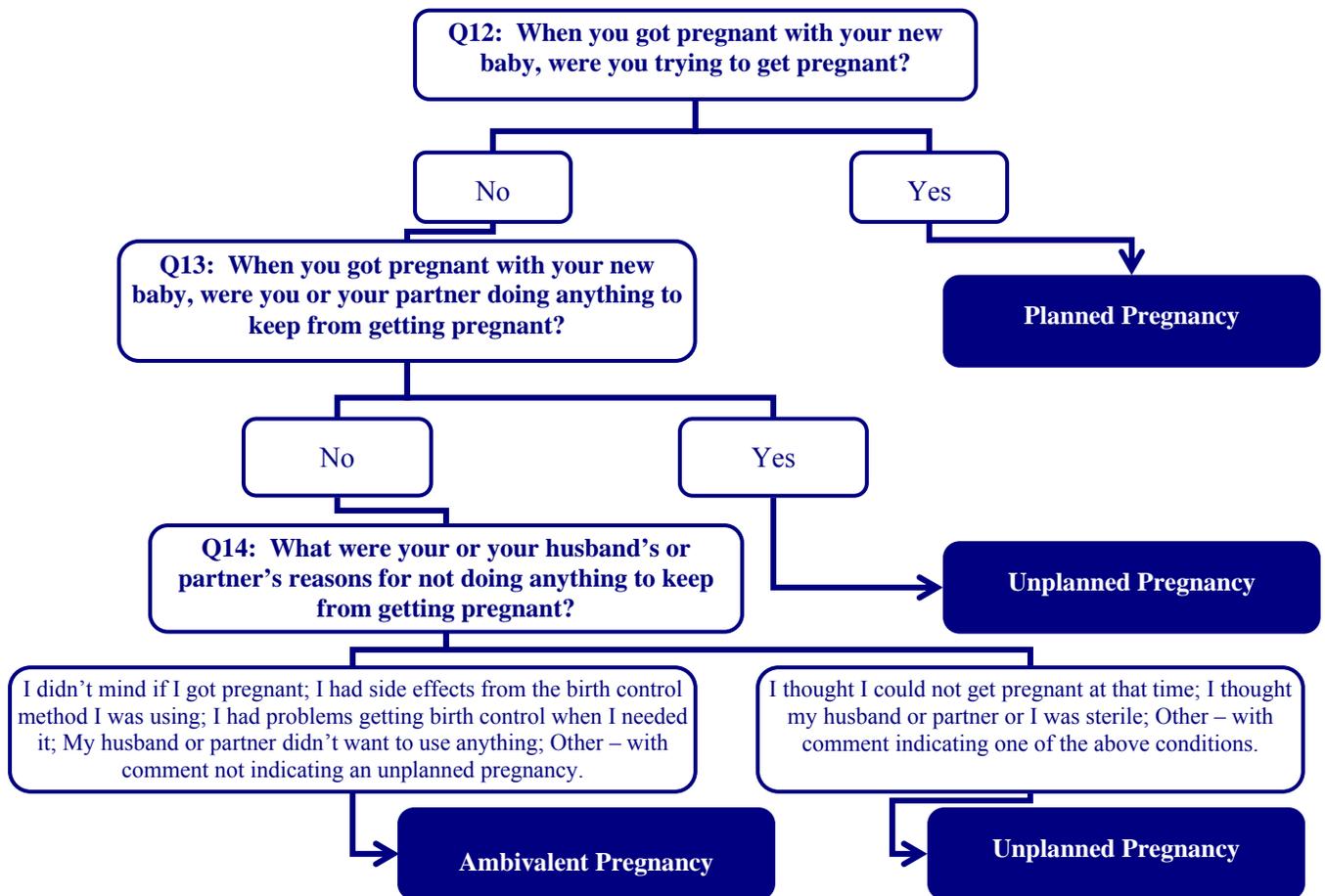
I thought my husband or partner or I was sterile (could not get pregnant at all)

My husband or partner didn’t want to use anything

Other → Please tell us:

planning status were examined using chi-square tests of independence. Multiple logistic regression models were then used to further investigate racial disparities in pregnancy planning. That is, a logistic model was run to compare the prevalence of unplanned pregnancies with planned pregnancies and another to compare the prevalence of ambivalent pregnancies with planned pregnancies. Mother’s age, education, marital status, pre-pregnancy multivitamin use, Medicaid status, pre-pregnancy alcohol use, prenatal care entry in the first trimester, household income,

Figure 2: Definition of the pregnancy planning variable



infant’s birth weight, and partner’s desire for pregnancy were included as potential covariates in each model. Stepwise backward deletion was used to select covariates included in logistic models, keeping all covariates with a Wald p-value of 0.20 or greater. Potential interactions with maternal race were assessed at a level of $\alpha=0.05$.

Results

The 4,715 mothers included in this study were weighted to represent approximately 165,220 S.C. women who delivered a live-born infant during 2004-2007. Overall, 42.6 percent of these mothers had planned pregnancies, 18.7 percent had ambivalent pregnancies, and 38.7 percent had unplanned pregnancies.

The prevalence of planned pregnancies among African-American mothers increased each year from 2004 to 2007, moving from 20.9 percent to 29.4 percent. Conversely, the prevalence of unplanned pregnancies decreased each year, dropping from 60.5 percent in 2004 to 49.8 percent in 2007. The prevalence of ambivalent pregnancies increased from

2004 to 2005 and remained level through 2007 (Figure 3a).

Among white mothers, the prevalence of planned pregnancies decreased each year, falling from 55.5 percent in 2004 to 48.9 percent in 2007. The prevalence of unplanned pregnancies increased from 28.8 percent to 32.7 percent from 2004 to 2006, but fell to 28.2 percent in 2007 for a slight net decrease. The prevalence of ambivalent pregnancies increased overall from 15.7 percent in 2004 to 22.9 percent in 2007 (Figure 3b).

Overall, a significant bivariate association ($p<0.0001$) was observed between maternal race and pregnancy planning status. Compared to African-American mothers, more white mothers had planned pregnancies (52% vs. 24.8%). Meanwhile, more African-American mothers had unplanned pregnancies in comparison to white mothers (54.9% vs. 29.6%).

In the logistic model comparing the prevalence of unplanned pregnancy to planned pregnancy, a significant interaction was observed between

Figure 3a: Pregnancy planning status among African-American women delivering live births, 2004-2007.

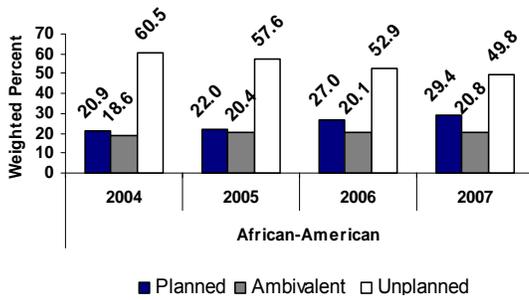
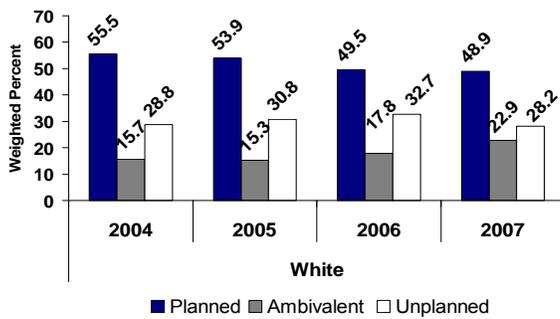


Figure 3b: Pregnancy planning status among White women delivering live births, 2004-2007



maternal race and partner’s desire for pregnancy. Similarly, in the model comparing the prevalence of ambivalent pregnancy to planned pregnancy, significant interactions were observed between maternal race and partner’s desire for pregnancy as well as between maternal race and household income (Table 1).

African-American women whose partners did not want them to be pregnant had significantly lower odds of having an unplanned pregnancy than a planned pregnancy, compared to white women (adjusted odds ratio [AOR]: 0.23; 95% confidence interval [CI]: 0.07, 0.77). African-American women whose partners wanted them to be pregnant had greater odds of having an unplanned pregnancy (AOR: 1.56; 95% CI: 1.10, 2.21) or an ambivalent pregnancy (AOR: 2.80; 95% CI: 1.47, 5.32), compared to white women.

African-American women with a household income of less than \$10,000 had significantly lower odds of having an ambivalent pregnancy, compared to white women (AOR: 0.38; 95% CI: 0.19, 0.75), while African-American women with an income of \$35,000 or more had greater odds of having an ambivalent pregnancy, in comparison to white women (AOR: 2.80; 95% CI: 1.47, 5.32).

Discussion

Pregnancy planning versus pregnancy intendedness

The distinction between the concepts of pregnancy intendedness (feeling-based) and pregnancy planning (action-based) is an important one for maternal and child health researchers and policy makers. The trouble with attempting to quantify pre-pregnancy intendedness in the postpartum period is well documented in the literature.^{2,7-9} Pre-pregnancy actions, on the other hand, are more concrete and may be less prone to inaccurate recall.

Beyond the issue of accurate measurement, pregnancy planning is much more easily modified than pregnancy intendedness through public health policy and education. Moreover, changing a woman’s pregnancy intendedness should probably not be a maternal and child health goal in most situations. Rather, sound policies and educational initiatives should be studied and enacted to help women match their pregnancy planning behaviors to their pregnancy intendedness feelings. A necessary first step is to better measure and understand data and trends in pregnancy planning and how they compare to pregnancy intendedness data and trends.

Racial disparity in pregnancy planning

A clear racial disparity exists in pregnancy planning among women in S.C. White women are much more likely to have planned pregnancies than African-American women while African-American women are much more likely to have unplanned pregnancies. This racial gap is narrowing, though not in a manner that is totally ideal.

It is encouraging that the prevalence of planned pregnancy increased and the prevalence of unplanned pregnancy decreased every year from 2004 to 2007 among African-American women. This trend, combined with the decreasing prevalence of planned pregnancy among white women, has led to a reduction of the disparity in planned pregnancies. Though a decrease in disparity is desirable, it would be ideal if the prevalence of planned pregnancies were increasing among both white and African-American women, with the prevalence among African-Americans climbing at a faster rate.

Table 1: Adjusted odds ratios from multivariate logistic regression analyses modeling pregnancy planning status, 2004-2007.

Partner wanted Pregnancy	Maternal Race	Unplanned Pregnancy* AOR (95% CI**)	Ambivalent Pregnancy* AOR (95% CI**)
No	African-American	0.23 (0.07, 0.77)	0.81 (0.19, 3.43)
	White	1.00	1.00
Yes	African-American	1.56 (1.10, 2.21)	2.80 (1.47, 5.32)
	White	1.00	1.00

Household Income	Maternal Race	Unplanned Pregnancy* AOR (95% CI**)	Ambivalent Pregnancy* AOR (95% CI**)
<\$10,000	African-American	----	0.38 (0.19, 0.75)
	White	----	1.00
\$10,000 - \$19,999	African-American	----	1.07 (0.50, 2.27)
	White	----	1.00
\$20,000 - \$34,999	African-American	----	1.29 (0.57, 2.96)
	White	----	1.00
≥\$35000	African-American	----	2.80 (1.47, 5.32)
	White	----	1.00

*Compared to planned pregnancy

**95% Confidence Interval

When taking a closer look at the relationship between maternal race and pregnancy planning using logistic regression models it becomes clear that the observed disparity is not as straightforward as it might first appear. The effect of race on unplanned pregnancy is modified by the partner's desire for pregnancy and the effect of race on ambivalent pregnancy is modified by both partner's desire for pregnancy and household income.

Among African-American women, partner's desire for pregnancy is very influential. African-American women whose partner did not want a pregnancy were less likely to have an unplanned pregnancy than white women. However, African-American women whose partners did want a pregnancy were much more likely to have both unplanned and ambivalent pregnancies than white women. Sufficient data to understand the reasons that partner's desire for pregnancy impacts both unplanned and ambivalent pregnancies so greatly among African-American women are not available from PRAMS. We speculate, however, that this is a reflection of differing cultural norms and priorities.

Furthermore, African-American women living with an annual household income of less than \$10,000 had lesser odds of having an ambivalent pregnancy than white women. However, African-American women with a household income of \$35,000 or more had greater odds of having an ambivalent pregnancy than white women. A

potential reason for this association is that a greater percentage of African-American women with a household income of less than \$10,000 were on Medicaid before pregnancy than white women (45.9 percent versus 32.7 percent) and, thus, eligible for services such as family planning. In contrast, less than five percent of African-American and white women with household incomes at \$35,000 or above were on Medicaid before pregnancy. This may indicate that family planning educational programs targeted at low-income African-American women are achieving the desired results.

The data presented in this report have several limitations. Data for the pregnancy the planning variable were gathered retrospectively, which could lead to recall bias. The question used to determine partner's desire for pregnancy asks the mother whether her partner ever told her that they did not want her to be pregnant, so it may result in an underestimation of partners who truly did not desire the pregnancy. Also, some women may feel that it would be socially undesirable to report their pregnancy was not intended or planned, which could lead to an underestimation of unplanned pregnancies.

A major limitation is that these analyses are restricted to pregnancies ending in live births. It

has been estimated that about half of all unintended pregnancies in the United States end in abortion¹⁰. There were over 47,555 abortions to S.C. residents in 2004-2007, thus very many unplanned and some ambivalent pregnancies can not be captured by data from sources that only sample live-births.

Conclusion

Public health researchers and policy makers should understand the difference between pregnancy intendedness and pregnancy planning concepts so that the most appropriate measure is used in a given situation. In addition, the strengths and limitations for measuring both intendedness and planning should be considered in order to plan programs most effectively.

Researchers and healthcare providers should be aware that while planned pregnancies are increasing in prevalence among African-American women and decreasing in prevalence among white women, white women remain more likely to have planned pregnancies. Additionally, among African-American women, partner's desire for pregnancy overrides the effect of the racial disparity for both unplanned and ambivalent pregnancies. Finally, the interaction between maternal race and household income may be an indication of the value and impact of family planning services offered to those at risk of unplanned pregnancies.

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References

1. Sable MR. Pregnancy intentions may not be a useful measure for research on maternal and child health outcomes. *Fam Plann Perspect.* 1999; 31: 249-249
2. Petersen R, Moos MK. Defining and measuring unintended pregnancy: issues and concerns. *Womens Health Issues.* 1997; 7: 234-240
3. Rosenzweig MR, Wolpin KI. Maternal expectations and *ex post* realizations. *J Hum Resour.* 1993; 28: 205-227
4. Klerman LV. The intendedness of pregnancy: a concept in transition. *Matern Child Health J.* 2000; 4: 155-162
5. Smith M, Wilkerson K, Helms K. Feelings versus actions: comparing pregnancy intendedness and pregnancy planning in South Carolina, 2004-2007. Columbia, SC; South Carolina Department of Health and Environmental Control
6. Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health.* 2006; 38: 90-96
7. Afaible-Munsua A, Braveman P. Pregnancy intention and preterm birth: differential associations among a diverse population of women. *Perspect Sex Reprod Health* 2008; 40: 66-73
8. Bachrach CA, Newcomer S. Intended pregnancies and unintended pregnancies: distinct categories or opposite ends of a continuum? *Fam Plann Perspect.* 1999; 31: 251-252.
9. Poole VL, Flowers JS, Goldenberg RL, et al. Changes in intendedness during pregnancy in a high-risk multiparous population. *Matern Child Health J.* 2000; 4: 179-182
10. Joyce T, Kaestner R, Korenman S. The stability of pregnancy intentions and pregnancy related maternal behaviors. *Matern Child Health J.* 2000; 4: 171-178.
11. Henshaw SK. Unintended pregnancy in the United States. *Fam Plann Perspect.* 1998; 30: 24-29 & 46.

