

## **Pregnancy Intentions and Maternal Behaviors: Testing the Relationship with New Measures and Methods of Analysis**

### **Introduction**

The overall unintended pregnancy rate among women of reproductive age in the US is higher than other developed countries, and has remained relatively unchanged between 1981 and 2006 (54 per 1,000 women ages 15-44 in 1981 and 52 per 1,000 in 2006).<sup>1,2,3</sup> But the proportion of these unintended pregnancies that end in a birth rather than an induced abortion has been increasing, from 46% in 1981 to 57% in 2006.<sup>4</sup> Clearly, greater attention needs to be paid to understanding the consequences to infants, mothers and families of a birth resulting from unintended pregnancy.

Public health policy—and much of current research work in reproductive behaviors —is strongly influenced by the premise that unintended childbearing has significant negative effects on the behavior of mothers both during pregnancy and afterward, and that such behaviors directly affect the health and wellbeing of the infant. In the United States, findings pointing to negative consequences of unintended childbearing undergird efforts to improve public health by reducing unintended childbearing, primarily by redoubling efforts to increase access to and use of contraception.

Are women who intended to get pregnant more likely to perform beneficial maternal behaviors in pregnancy and even afterward, than women who did not intend to? Such differences in behaviors may lead to poorer health and social outcomes for an infant. Research findings on these relationships are mixed; while numerous studies have found an association of childbearing intentions with maternal behaviors and with infant health, others have not.<sup>5,6</sup> In addition, even for those studies showing a strong association between pregnancy intentions and maternal behaviors and infant health, we do not know what accounts for such differences. Is it because women who did not want to become a mother at that time or ever lack motivation for seeking out the knowledge and resources needed to insure performance of the best maternal behaviors? Or, is it that they do not have the social, emotional or financial support of women having births when they want to do? In short, perhaps they simply have more obstacles to overcome, which may be why they didn't want to become pregnant in the first place.

However, there are two problems that may not have been adequately addressed in the body of research addressing the consequences of unintended childbearing: inaccurate measurement of pregnancy intentions (the primary independent variable of interest) and potential selection bias and confounding in the models used to assess the relationship of intentions and outcomes. This study addresses both of these issues.

### *Measurement of Intentions*

Are we accurately measuring childbearing intentions? If not, then inconsistent findings from previous studies may be due to imprecision in the measurement of intentions, or worse, failure to discern what the measurements we are using actually capture.

We address only retrospectively-obtained childbearing intentions (and use the terms “childbearing intentions” and “pregnancy intentions” interchangeably). In retrospective surveys, the conventional questions ask women to think back and characterize their feelings before a prior pregnancy in two ways: whether they had wanted to have a baby and if so, whether, the pregnancy occurred at the right time, later than wanted or too early. Thus, the measure requires a woman's assessment of her plans or feelings about having a baby prior to becoming pregnant, regardless of whether she actually *had* plans, or would have characterized her feelings in the same framework as the limited number of response options she is offered in the survey. For this and other reasons, conventional measures of pregnancy intentions have been

criticized as being insufficient for, and possibly irrelevant to, defining women's true desires and motivations to avoid or become pregnant.

There are numerous critiques of the most commonly used, or conventional, measure of childbearing intentions, and many studies have shed light on its shortcomings, including: inconsistent associations of intentions and behaviors (e.g. using contraception but reporting a pregnancy as wanted, or not using but not wanting to get pregnant); potential biases of retrospective reporting, such that mothers may change their feelings about pregnancy after a birth (when the questions are asked); and inability to identify women with unformed or ambivalent feelings toward pregnancy or those for whom childbearing is not viewed as an intentional choice but an experience dictated by fate (e.g. "God's will").

If inadequacy of the intention measure to capture women's motivations toward pregnancy accounts for the less than clear relationship between intentions and outcomes, then improved measurement may lead to stronger demonstration of the relationship or at least a more refined understanding of the pregnancy motivations that do and do not affect behaviors.

### *Confounding and Selection Bias*

It has long been known that pregnancy intentions are strongly related to women's basic demographic characteristics: age, marital status, race/ethnicity and parity. At the population level, unintended pregnancy rates differ sharply by demographic subgroup.<sup>7</sup> These same demographic characteristics are related to maternal behaviors during and after pregnancy as well as measures of infant health such as birth weight or gestation. Thus, the effects of pregnancy intentions on the outcomes of interest are likely to be confounded with the effects of the women's demographic characteristics.

A related though slightly different problem is selection bias, the potential for which may be especially high when comparing women with differing pregnancy intentions. Women who have intended births to and those who have unintended ones may be different in significant ways, and not just in their pregnancy intentions or in their basic demographic characteristics (e.g., age, marital status, and parity). And previous research may not have adequately accounted for these differences by simply including a limited number of demographic and socioeconomic variables in multivariate models.

Selection bias is present if there are certain characteristics – both observable in the data as well as unobserved – that make some women more likely to have an unintended pregnancy than other women. Observed characteristics that might influence pregnancy intentions are religious affiliation or measured attitudes toward abortion or contraception. Unobserved characteristics might be personality-based, such as a penchant for taking risks, greater sexual activity, or even less reliable access to reproductive health services or difficulties using contraception. If these characteristics affect who experiences an unintended pregnancy (and, perhaps even more importantly, who continues an unintended pregnancy to a birth), then selection bias could be affecting research findings.

Only a handful of studies have tried to address selection bias generally through techniques such as sister studies or prospectively-collected data. But these studies are not without significant limitations, including small samples and inability to generalize to the larger population of women experiencing unintended pregnancy.

In this study we employ a statistical method as yet unused for this body of research—inverse probability weighting—in an effort to address potential confounding and selection bias, and to provide a more stringent test of the relationship between pregnancy intentions and maternal behaviors during and after pregnancy. In addition, we compare findings using three alternative measures of pregnancy intentions to assess whether the conventional measure may be adequate for identifying the impact of pregnancy intentions on maternal behaviors and infant health outcomes.

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<sup>1</sup> Singh S, Sedgh G and Hussain R. Unintended Pregnancy: Worldwide Levels, Trends, and Outcomes. *Studies in Family Planning*, 2010, 41(4):241-250.

<sup>2</sup> Finer LB and Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health*, 2006, 38(2):90-96

<sup>3</sup> Finer LB and Zolna MR, Unintended pregnancy in the United States: incidence and disparities, 2006, *Contraception*, 2011, 84(5):478-485.

<sup>4</sup> Ibid, see references 2 and 3.

<sup>5</sup> Gipson JD, Koenig MA and Hindin MJ. The effects of unintended pregnancy on infant child and parental health: A review of the literature. *Studies on Family Planning*, 2008, 39(1):18-38.

<sup>6</sup> Logan C, Holcombe E, Manlove J and Ryan S. *The Consequences of Unintended Childbearing*, Washington, DC: Child Trends, Inc., 2007.

<sup>7</sup> see reference 2 and 3.