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Side Effects, Physical Health Consequences, and Mortality Associated with Abortion and Birth after an Unwanted Pregnancy

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A B S T R A C T

Introduction: The safety of abortion in the United States has been documented extensively. In the context of unwanted pregnancy, however, there are few data comparing the health consequences of having an abortion versus carrying an unwanted pregnancy to term.
Methods: We examine and compare the self-reported physical health consequences after birth and abortion among participants of the Turnaway Study, which recruited women seeking abortions at 30 clinics across the United States. We also investigate and report maternal mortality among all women enrolled in the study.
Results: In our study sample, women who gave birth reported potentially life-threatening complications, such as eclampsia and postpartum hemorrhage, whereas those having abortions did not. Women who gave birth reported the need to limit physical activity for a period of time three times longer than that reported by women who received abortions. Among all women enrolled in the Turnaway Study, one maternal death was identified—one woman who had been denied an abortion died from a condition that confers a higher risk of death among pregnant women.
Conclusion: These results reinforce the existing data on the safety of induced abortion when compared with childbirth, and highlight the risk of serious morbidity and mortality associated with childbirth after unwanted pregnancy.

The safety of abortion under current medical guidelines (World Health Organization [WHO], 2012) has been extensively documented (Cates Jr., Rochat, Grimes, & Tyler Jr., 1978; Raymond & Grimes, 2012; Raymond, Grossman, Weaver, Toti, & Winikoff, 2014). Induced abortion is among the safest outpatient procedures performed in the United States (Raymond & Grimes, 2014; Upadhyay et al., 2015). The risk of mortality from childbirth in the United States is estimated to be 14 times higher than the risk from induced abortion, and the risk of all maternal morbidities, defined as "conditions either unique to pregnancy or potentially exacerbated by pregnancy that occurred in at least 5% of all pregnancies" is significantly higher among women who give birth than among those who have abortions (Raymond et al., 2014).

Women's self-reported experiences with the physical effects of abortion and birth have been documented in the medical literature (Declercq, Cunningham, Johnson, & Sakala, 2008; Lohr, Hayes, & Gemzell-Danielsson, 2008; Renner, Jensen, Nichols, & Edelman, 2009). However, subacute side effects are not captured routinely by traditional data sources, such as hospital electronic health records and medical billing codes. In the context of unwanted pregnancy (defined herein as a pregnancy that the woman wanted to terminate), there are few data that compare the health consequences of having an abortion versus carrying the pregnancy to term.

Data from the Turnaway Study, which follows women seeking abortion just under and just beyond the gestational age limit at abortion facilities across the United States, documents women's

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own reports of the side effects and physical health consequences experienced after abortion, or, if they were turned away after seeking abortion, ongoing pregnancy and birth. By asking women to report on the range of physical health effects of their abortion or birth, the Turnaway Study provides documentation of women's physical health experiences beyond what is captured by medical records of women who seek to terminate a pregnancy. The purpose of this analysis was to examine Turnaway Study participants' self-reported physical health consequences following birth and abortion, to document more comprehensively the morbidity and mortality associated with unwanted pregnancy.

Materials and Methods

The Turnaway Study is a prospective cohort study of women who sought abortions at 30 abortion facilities in the United States, some of whom did not receive the abortion they desired because of advanced gestational age. Women were recruited when they sought abortion and were interviewed by telephone 1 week later. The Turnaway Study follows participants for 5 years, interviewing them by telephone twice per year. This paper presents findings from the baseline and 6-month interviews. The University of California, San Francisco's Committee for Human Research approved this study. All participants provided informed consent.

Participants were English- and Spanish-speaking women, aged 15 or older, presenting at one of the study facilities between January 2008 and December 2010, without known fetal anomalies or demise. Facilities were selected if they provided abortions to the latest gestational age limit within a 150-mile radius. The gestational age limits of participating facilities ranged from the first to the end of the second trimester, set by state law and/or clinic policy. Four facilities had limits of 10 to 13 weeks, 8 facilities had limits between 14 and less than 20 weeks, and 18 facilities had gestational age limits of more than 20 weeks. Detailed descriptions of the study and recruitment facilities have been published elsewhere (Gould, Perrucci, Barar, Sinkford, & Foster, 2012; Roberts, Avalos, Sinkford, & Foster, 2012; Rocca, Kimport, Gould, & Foster, 2013).

Women who were eligible for the study were assigned to one of three study groups based on their gestational age at the time they sought an abortion. Women presenting at a facility up to 3 weeks over the facility's gestational age limit who were denied an abortion were assigned to the *turnaway group*. For every turnaway participant, we recruited two women for the *near limit abortion group* (women presenting at a facility with a pregnancy that was within 2 weeks under the facility's gestational age limit who obtained an abortion) and one woman for the *first trimester abortion group* (women who obtained a first trimester abortion). Each *turnaway group* participant was treated as an index case for which we sought two *near limit group* participants and one first trimester abortion group participant from the same facility. The *first trimester abortion group* was included to assess how the experiences of women in the *near limit group* compared with the more typical experience of abortion in the United States, where 90% of abortions occur in the first trimester (Pazol, Creanga, Burley, & Jamieson, 2014).

The physical health effects of birth and abortion were assessed via self-report. Women in all three study groups were asked the following two open-ended questions regarding their physical health experiences after birth or abortion: 1) "Did you experience any side effects or health problems from your [birth/abortion]?" and 2) "Was there a period after your [birth/abortion] when you were physically unable to do daily activities such as walking, climbing steps or doing errands?" If participants answered affirmatively to either the first or second question, they were asked the following follow-up questions: 1) "What side effects or health problems did you experience?" and 2) "How long were you physically unable to do daily activities such as walking, climbing steps, or doing errands?"

Responses to open-ended questions about side effects and health problems were classified into categories and coded according to ICD-10 disease classifications when possible. Self-reported health problems or side effects were classified as potentially life-threatening conditions if any maternal deaths had been recorded in the United States from a related cause in the most recent 5 years of available data (Creanga et al., 2015).

To examine maternal mortality, defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (WHO, 1993) we searched for maternal deaths among all women who enrolled in the study. We gathered data from two sources of information: personal contacts and the National Death Index, a central computerized index of death record information on file in all state vital statistics offices. In the event we could not reach the participant, we contacted individuals named by the participant as someone the study investigators could contact. If this secondary contact stated the participant had died, the contact was asked to specify the date and cause of death, as well as the city and state where the participant died. The National Death Index was consulted to determine whether any women who had enrolled in the study but were lost to follow-up (or reported dead by a secondary contact) had died. All identified maternal deaths were confirmed by requesting death certificates or coroners' reports regarding the cause of death. In reporting cause of death for all deaths in this study, we have complied with federal health information restrictions that require withholding the specific clinical diagnosis.

Statistical Analysis

We examined the distributions of variables of interest to ensure approximate normal distribution. Descriptive, bivariable analyses were performed to describe the study population and assess the frequency of reporting side effects or health problems after first trimester abortion, later abortion, and childbirth that were attributed to the birth or abortion. Statistical significance was assessed first through global χ^2 tests for homogeneity, and, where heterogeneity was indicated, though pair-wise comparisons using the *near limit group* as the reference category.

Results

Of eligible women approached, 37.5% consented to participate, and 85% of those who consented ($n = 956$) completed the baseline interview. Ninety-two percent of those who completed the baseline interview were retained at the first follow-up interview (6 months). There was no differential participation across the two main study groups (*near limit abortion* and *turnaway*), but fewer women eligible for the *first trimester abortion group* participated. Of the 956 who completed a baseline interview, 452 were in the *near limit abortion group,* 231 in the *turnaway group,* and 273 in the *first trimester abortion group.* Because the main comparison of interest for this analysis is the