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The relationship between pregnancy intention and alcohol use behavior: An analysis of PRAMS data

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ABSTRACT

This study examined the relationship between pregnancy intention and change in perinatal alcohol use between 3 months prior to pregnancy and the last 3 months of pregnancy from a large national sample of women in the United States, the 2004–2008 Pregnancy Risk Assessment Monitoring System (PRAMS). The study sample consisted of 95,728 women who reported any alcohol drinking in 3 months prior to pregnancy. There was no relationship between pregnancy intention and cessation or reduction in alcohol use. Those whose pregnancies were unwanted were significantly more likely to report binge drinking during pregnancy compared to women with intended/mistimed pregnancies (AOR 1.55 [95% CI: 1.20, 1.99]). These findings suggest that interventions targeting binge drinking, perhaps particularly among women who drink in the 3 months prior to pregnancy and who do not want to become pregnant, are needed.

1. Introduction

Cigarettes and alcohol are the licit substances most commonly used by women of reproductive age in the United States (U.S.) (Ebrahim, Decoufle, & Palakathodi, 2000; Substance Abuse & Mental Health Services Administration, 2011). Alcohol use during pregnancy is a major preventable cause of birth defects and developmental disabilities. In-utero alcohol exposure can lead to fetal alcohol spectrum disorders (FASDs), which include fetal alcohol syndrome, alcohol-related birth defects, and alcohol-related neurodevelopmental disorder, and are estimated to affect at least 1% of all births in the U.S. (May et al., 2009; Naimi, Lipscomb, Brewer, & Gilbert, 2003). Alcohol use during pregnancy is the leading preventable cause of mental retardation (Clarren & Smith, 1978; Coles, 1993). These risks prompted the Surgeon General's office, in 2005, to advise no alcohol use to all women who might become pregnant or who are pregnant. Similarly, the American Congress of Obstetricians and Gynecologists recommends abstinence from any alcohol during pregnancy. In addition, Healthy People 2020 set specific targets for pregnant women regarding alcohol use, including binge drinking, defined as greater than 3 drinks per occasion (US Department of Health & Human Services, 2012).

Despite government and health care provider recommendations, goals, and interventions, in the U.S. approximately 52% of reproductive age women report using alcohol, and 15% report binge drinking in the past 30 days, with 8% of women using alcohol and 1% binge drinking during pregnancy (Centers for Disease Control & Prevention (CDC) (CDC), 2012).

Half of all pregnancies in the U.S. are unintended (Finer & Zolna, 2011). Compared to women whose pregnancies are planned, women with unintended pregnancies are less able to modify harmful health behaviors, such as reduce alcohol use and enter prenatal care early (Altfeld, Handler, Burton, & Berman, 1997). For example, once aware of their pregnancy, women with unintended pregnancies are less able to modify harmful health behaviors (Cheng, Schwarz, Douglas, & Horon, 2009; Chisolm, Cheng, & Terplan, 2014).

To date, no large-scale studies of nationally representative samples have examined the relationship between pregnancy intention and change in perinatal alcohol use. The current study analyzed data from Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS is a national surveillance system designed to monitor self-reported behaviors, health care use, and morbidities of women before, during, and after pregnancy. The availability of data that permit comparisons of behaviors from pre-pregnancy, during pregnancy, and postpartum represents an opportunity to investigate the relationships among various maternal health behaviors and close gaps in knowledge. The main objective of this study was to examine the relationship between pregnancy intention and alcohol use behavior. The study hypothesized that alcohol-using women who have intended pregnancies will report greater reduction in alcohol use during pregnancy compared to women who have unintended pregnancies.

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2. Materials and methods

2.1. Study Design

The 2004–2008 PRAMS collected data from a nationally representative sample of postpartum women. Data from 33 states and New York City were included because their overall response rate was 70% or more for 2004–2006 and 65% or more for 2007–2008, as per recommended thresholds established by the CDC. Data were included for all 5 years (2004–2008) from 19 states: Alaska, Arkansas, Colorado, Georgia, Hawaii, Illinois, Maine, Maryland, Michigan, Minnesota, Nebraska, New Jersey, New York (excluding New York City), Oklahoma, Oregon, Rhode Island, Utah, Vermont, and West Virginia; for 4 years from New York City, North Carolina, Ohio, and South Carolina; and for 1–3 years from Delaware, Florida, Louisiana, Massachusetts, Mississippi, Missouri, New Mexico, Pennsylvania, Tennessee, Wisconsin, and Wyoming. PRAMS is an ongoing state- and population-based surveillance project of the Centers for Disease Control and Prevention and state health departments designed to monitor selected maternal behaviors and experiences that occur before, during, and shortly after pregnancy among women who deliver live-born infants in the U.S. Each state uses a monthly stratified sample system to survey 100–300 new mothers 2 to 9 months after delivery. Women who do not respond to two or three mailings are contacted by telephone to complete the survey. Survey data are linked to selected birth certificate data and weighted for sample design, non-response, and non-coverage. The weighted data represents all women delivering live infants in the respective state in the given year. Details about the PRAMS design and methods are available elsewhere (Shulman, Gilbert, Msphbrenda, & Lansky, 2006). The PRAMS project has been approved by the CDC institutional review board. The University of Maryland, the Maryland Department of Health and Mental Hygiene, and the Johns Hopkins University Institutional Review Boards exempted the current study from IRB approval.

2.2. Measures

Sample inclusion criterion was limited to those respondents who reported any alcohol consumption in the 3 months prior to pregnancy.

Demographic and background characteristics collected in PRAMS included variables generated from birth certificates (e.g., age, education, race/ethnicity, parity, marital status) and from questionnaire (e.g., income, health insurance, prenatal care health behaviors, and birth outcomes).

Pregnancy intention was assessed by response to the following question: "Thinking back to *just before* you got pregnant with your *new* baby, how did you feel about getting pregnant?" [emphasis in original]. Those who responded "I wanted to be pregnant then" or "I wanted to be pregnant sooner" were classified as intended pregnancies. Those who responded "I wanted to be pregnant later" were classified as mistimed. Those who responded "I didn't want to be pregnant then or at any time in the future" were classified as unwanted. For the binary analysis intended and mistimed pregnancies were grouped together and contrasted with unwanted pregnancies. These variable definitions correspond to those in the existing literature, and the decision to dichotomize the variables was made in order to better isolate the different life-choice considerations captured in pregnancy intention measurements (Luker, 1999; Santelli et al., 2003).

Alcohol use behavior was assessed by several questions. Respondents were asked how many drinks they drank in an "average week" during the 3 months prior to pregnancy and during the last 3 months of pregnancy. The time frames were selected by PRAMS to reflect preconception alcohol use or use before pregnancy confirmation as well as late pregnancy alcohol use. The PRAMS survey used no other time frames to evaluate maternal drinking status. Clarification of a standard drink was provided by the statement: "A drink is 1 glass of wine, wine cooler, can or bottle of beer, shot of liquor, or mixed drink." Drinking change in pregnancy was assessed by comparing the reported drinks/week in the 3 months prior to pregnancy to the reported drinks/week in the last 3 months of pregnancy. Individuals who reported no drinks were designated as quit; those that reported a decrease in the number of drinks/week were designated as reduced; and those who reported no change or an increase in the number of drinks/week were designated as same/more. Additionally we created a variable to capture heavy drinking which was defined as 7 or more drinks/week. PRAMS also captured information on binge drinking. Respondents were asked both during the 3 months prior to pregnancy and in the last 3 months of pregnancy how many times they had drunk 5 or more alcoholic drinks in one sitting. Anyone who reported 5 or more drinks in one sitting was considered to have had an episode of binge drinking.

2.3. Data Analysis

Population adjusted proportions with 95% confidence intervals (CI) were computed using the population weight assigned to each observation in the PRAMS data set. Bivariate analysis was performed comparing pregnancies that were classified as intended/mistimed and unwanted using the chi-square statistic for select demographic factors. Interaction was assessed through stratified analysis. Next, crude odds ratios were computed via logistic regression to determine the odds of drinking behavior change by pregnancy intention. Variables that were associated with both pregnancy intention and continued drinking were considered to be potential confounders and included in a full model. Backwards logistic regression was then manually performed, using a change-in-estimate criteria of 10% to arrive at the final model.

3. Results

3.1. Sample

The final sample consisted of 95,728 women who had a recent live birth and self-reported any alcohol use in the 3 months prior to pregnancy. The sample represented a population that was approximately 74.9% White, 11.9% Black, 7.9% Hispanic, and 5.3% other racial groups. Approximately 6.2% of the sample was less than 20 years of age, 23.2% ages 20–24, 29.4% ages 25–29, and 40.3% age 30 or older. Approximately 89.3% had at least 12 years of education, and 65.7% were married. Most (84.2%) initiated prenatal care in the first trimester, however only 73.0% reported having drinking discussed during their pregnancy care. Table 1 summarizes these demographic and other background characteristics of the sample.

3.2. Alcohol use behavior during pregnancy

Among women who drank alcohol in the 3 months prior to pregnancy, most (86.6%) reported quitting by the last 3 months of pregnancy, 7.0% reported reducing, and 6.4% reported drinking the same or more. Binge drinking was far more common in the 3 months prior to pregnancy than in the last 3 months (35.6% vs. 1.4%) as was heavy drinking (6.8% vs. 0.4%).

3.2. Alcohol use behavior by pregnancy intention

Table 2 compares estimates of heavy and binge drinking pre-pregnancy to the last 3 months of pregnancy, as well as alcohol behavior change, based on pregnancy intention (intended/mistimed vs. unwanted). Pre-pregnancy drinking behavior differed by