

PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 17 NO 1 SUMMER 2013

Pre-pregnancy Binge Drinking and Postpartum Depression

Introduction:

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) defines binge drinking as consuming four or more alcoholic drinks in a two hour time span (for women).¹ Approximately 15.0% of non-pregnant women in the United States reported any binge drinking in the last 30 days.² Among pregnant women, the rate was 1.4% in the last 30 days.² Among those who reported binge drinking, both pregnant and non-pregnant women binge drank about three times in a month, approximately six drinks per two hour time span. Non-pregnant women aged 18–24 years reported the highest rates of binge drinking and consumed the largest number of drinks per binge drinking episode.²

Alcohol use during pregnancy is a leading cause of preventable birth defects and developmental disabilities in the United States. No safe level of alcohol consumption during pregnancy has been established. In 2005, the Office of the Surgeon General issued recommendations that pregnant women, those planning to become pregnant, and women at risk for becoming pregnant abstain from alcohol use.³

Because the first eight weeks after conception include organ development, the fetus is at greatest risk from toxins, including alcohol, during this time period. Research has shown that increased use of alcohol during the first trimester increases the risk for miscarriage. Fetal Alcohol Spectrum Disorders (FASD) are caused by prenatal consumption of alcohol, and range from mild to severe. Some longer term studies have found associations between prenatal binge drinking and mental health problems, hyperactivity and inattention problems later in childhood.⁴

Studies suggest that depression during pregnancy is associated with a mother's personal history with depression, greater alcohol consumption, poor health,

In Oklahoma:

- 46.8% of women binge drank in the 3 months prior to pregnancy.
- Unmarried mothers were more likely to report binge drinking before pregnancy than married mothers (53.3% vs. 46.7%).
- Mothers who binge drank before pregnancy also were more likely to use tobacco before (55.6% vs. 37.4%) and during (28.6% vs. 19.1%) pregnancy.
- Almost two-thirds of mothers with Medicaid-funded prenatal or delivery care (65.0%) binge drank before pregnancy compared to 49.7% of mothers without Medicaid-funded care.
- Mothers who binge drank were more likely to report that someone very close to them had a problem with drinking or drugs (28.2% vs. 15.9%).
- Women who binge drank prior to pregnancy were 2.2 times more likely to have symptoms of postpartum depression.
- Mothers who had someone very close to them with a drinking or drug problem were 2.9 times more likely to have symptoms of postpartum depression.

smoking, being unmarried, and socioeconomic status.⁵ Less known is whether or not having knowledge of pre-pregnancy binge drinking behaviors can help identify women at risk for postpartum depression in order to provide education during preconception and prenatal care counseling.

Alcohol use disorders and mental health disorders, like depression, often occur in the same individual.² According to a recent study published in the *Maternal and Child Health Journal*, binge drinking during

pregnancy was a risk factor for postpartum depression symptoms among women eligible for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).⁶ In Oklahoma, 58.8% of new mothers had WIC during their pregnancy in 2009-2010 (unpublished Oklahoma PRAMS data).

This PRAMS report explores characteristics of mothers who binge drank prior to pregnancy and examines the relationship between pre-pregnancy binge drinking and symptoms of postpartum depression for mothers in Oklahoma.

Methods:

Data from the 2009-2010 Oklahoma PRAMS survey were used in this analysis. The survey asks new mothers if they drank alcohol in the three months before their pregnancy, how many drinks on average did they consume, and how many times did they drink four or more alcoholic drinks in one sitting (a two hour time span). Mothers who said they did have one or more episodes of consuming four or more drinks in one sitting were classified as having experienced “binge drinking.”

Prevalence rates and 95% confidence interval (C.I.) estimates were calculated and the potential risk factors were identified using the Cochran-Mantel-Haenszel Chi-Square (χ^2) Test. Analysis for this study was done using the statistical software SUDAAN. Variables were considered significant at $p < 0.05$.

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing, population-based study designed to collect information about maternal behaviors and experiences before, during, and after pregnancy. On a monthly basis, PRAMS samples between 200 and 250 recent mothers from the Oklahoma live birth registry. Mothers are sent as many as three mail questionnaires seeking their participation, with follow-up phone interviews for non-respondents. A systematic stratified sampling design is used to yield sample sizes sufficient to generate population estimates for groups considered at risk for adverse pregnancy outcomes. Information included in the birth registry is used to develop analysis weights that adjust for probability of selection and non-response.

Results:

Forty-seven percent of mothers in Oklahoma reported binge drinking at least one time in the three months before they became pregnant with their new infant (Table 1). Mothers who reported pre-pregnancy binge drinking were significantly less likely to be married, have less than a high school education, and/or have utilized Medicaid to pay for prenatal or delivery care services than mothers who did not binge drink prior to pregnancy. Differences by maternal age, race, and ethnicity were not statistically significant by binge drinking status.

Table 1: Oklahoma mothers who reported binge drinking in the three months before pregnancy, Oklahoma PRAMS 2009-2010				
Characteristics	No Binge Drinking		Binge Drinking	
	Rate	95% C.I.	Rate	95% C.I.
Overall	53.2	49.5-56.9	46.8	43.1-50.5
Age				
<20 yrs	8.2	5.7-11.6	11.6	8.5-15.7
20-29 yrs	64.0	59.2-68.6	67.2	16.9-72.1
≥30 yrs	27.8	23.7-32.3	21.2	17.1-25.9
Marital Status[§]				
Married	68.1	63.1-72.7	46.7	41.3-52.1
Unmarried	31.9	27.3-37.0	53.3	47.9-58.7
Education^{§*}				
<HS	8.5	5.2-13.7	20.1	14.4-27.4
HS	24.6	19.0-31.1	33.5	26.6-41.2
>HS	66.9	60.0-73.2	46.4	38.8-54.1
Race				
White	78.0	73.5-81.8	72.4	67.1-77.2
Black	5.4	3.5-8.3	5.7	3.5-9.1
American Indian	8.7	6.3-11.9	9.4	6.6-13.3
Others	7.9	5.6-11.1	12.4	9.1-16.7
Hispanic				
No	92.0	88.8-94.4	93.0	89.8-95.3
Yes	7.9	5.6-11.2	7.0	4.7-10.2
Medicaid[§]				
No	50.3	45.4-55.3	34.9	30.0-40.2
Yes	49.7	44.7-54.6	65.0	59.8-70.0
Household income[§]				
<\$10,000	17.6	13.9-22.0	24.3	19.7-29.5
\$10,000-\$24,999	25.6	21.4-30.3	31.8	26.8-37.3
\$25,000-\$49,999	22.8	18.9-27.3	21.0	16.9-25.8
\$50,000 or more	34.0	29.6-38.7	22.9	18.8-27.7

* Among mothers ages 18 years and older

§ Significant at $p < 0.05$

Table 2 highlights some of the differences in binge drinking status by different maternal behaviors. Mothers who reported binge drinking prior to pregnancy were significantly more likely to experience an unintended pregnancy (59.2% vs. 45.2%) and to smoke before and during pregnancy. Although not significantly different between groups, 9.4% of binge drinkers continued to drink during their last three months of pregnancy as did 8.6% of non-binge drinkers, increasing their infant's risk for birth defects and FASD.

Discussions with health care providers did not differ between groups of women. The percent of women who binge drank and received prenatal counseling on the effects of alcohol on the infant was 69.2% compared to 66.8% among those who did not (data not shown).

Maternal Behavior	No Binge Drinking		Binge Drinking	
	Rate	95% C.I.	Rate	95% C.I.
Pregnancy Intention[§]				
Intended	54.8	49.8-59.8	40.7	35.5-46.2
Unintended	45.2	40.2-50.2	59.2	53.8-64.5
Smoked 3 months before pregnancy[§]				
No	62.6	57.7-67.4	44.4	39.0-49.9
Yes	37.3	32.6-42.3	55.6	50.1-61.0
Drank alcohol last 3 months of pregnancy				
No	91.4	88.2-93.9	90.6	87.0-93.4
Yes	8.6	6.2-11.9	9.4	6.6-13.0
Smoked last 3 months of pregnancy[§]				
No	80.9	76.6-84.6	71.4	66.1-76.2
Yes	19.1	15.4-23.4	28.6	23.8-33.9

§ Significant at $p < 0.05$

Although rates for being checked or treated for depression and anxiety before pregnancy were not significantly different between the two groups, mothers who binge drank were more likely to report more than six life stressors (17.9% vs. 8.6%) than mothers who did not binge drink (Table 3). Life stressors included financial, partner-related, emotional, and traumatic life events. Mothers who binge drank were more likely to report that someone very close to them had a problem with drinking or drugs (28.2% vs. 15.9%). Postpartum depression symptoms also were more prevalent among women who binge drank, at 24.1% vs. 13.0% for non-binge drinkers.

Maternal Behavior	No Binge Drinking		Binge Drinking	
	Rate	95% C.I.	Rate	95% C.I.
Checked or treated for anxiety or depression in 12 months before pregnancy	13.6	10.5-17.4	16.0	12.4-20.5
Stressors before and during pregnancy[§]				
None	24.3	20.4-28.7	13.8	10.6-17.8
1-2 stressors	42.1	37.3-47.1	36.3	31.3-41.7
3-5 stressors	25.0	21.0-29.6	31.9	27.0-37.3
6-18 stressors	8.6	6.1-12.0	17.9	13.9-22.8
Physical abuse before or during pregnancy[§]	8.4	5.9-12.0	11.5	8.3-15.7
Someone very close having a drinking or drug problem^{*§}	15.9	12.5-20.1	28.2	23.4-33.5
Postpartum depression[§]				
No	87.0	83.3-89.9	75.9	70.7-80.4
Yes	13.0	10.1-16.7	24.1	19.6-29.3

*Also counted as a stressor in the grouped stressors category

§ Significant at $p < 0.05$

§ Significant at $p < 0.05$

Table 4 highlights the results of a multivariate logistic regression analysis to determine the association of binge drinking with postpartum depression symptoms, maternal demographics, and having a family member or friend with a problem with drugs or alcohol. When controlling for maternal demographics, binge drinking prior to pregnancy and having someone very close with a drinking or drug problem were significantly associated with symptoms of postpartum depression. Mothers who engaged in pre-pregnancy binge drinking were 2.2 times more likely to have symptoms of postpartum depression than women who did not binge drink prior to pregnancy. Mothers who binge drank prior to pregnancy also were 2.9 times more likely to have a family member or friend with a drug or alcohol problem.

Table 4. Multivariate Logistic Regression Adjusted Odds Ratios for Postpartum Depression, Oklahoma PRAMS 2009-2010*		
Predictors	Adjusted Odds Ratios (AOR)	95% Confidence Interval (C.I.)
Maternal Age		
<20 yrs	1.9	0.7-5.5
20-29 yrs	Reference	
≥30 yrs	1.1	0.5-2.3
Maternal Education[§]		
<HS	0.8	0.3-2.2
HS	Reference	
≥HS	1.0	0.5-1.9
Binge Drinking 3 Months Before Pregnancy		
No	Reference	
Yes	2.2	1.2-4.0
Marital Status		
Married	Reference	
Unmarried	1.6	0.8-3.3
Annual Income		
<\$10,000	1.6	0.7-3.8
\$10,000-\$24,999	Reference	
\$25,000-\$49,999	1.1	0.5-2.5
\$50,000 or more	0.8	0.3-1.9
Someone Very Close Having a Drinking or Drug Problem		
No	Reference	
Yes	2.9	1.5-5.5

*Controlling for maternal demographics

§ Among mothers ages 18 years and older

Discussion:

The association of binge drinking prior to pregnancy with symptoms of postpartum depression among new mothers indicates a need for heightened awareness of how pre-pregnancy behaviors may help identify future risks and present screening opportunities for new mothers. Although it is not possible to know from these data if women with symptoms of postpartum depression were experiencing other symptoms prior to pregnancy or delivery or if alcohol use contributed to feelings of depression, alcohol use is another factor to consider when working with pregnant and postpartum women.

The association of binge drinking prior to pregnancy with the presence of someone very close to the mother with a drinking or drug problem highlights the

importance of assessing the mother’s environment in addition to her own drinking behaviors. Counseling the individual without addressing the issue of close family or friends with substance abuse issues and their impact on the mother’s own drinking behaviors may be less effective in efforts to help a mother abstain from alcohol before, during, and after pregnancy. In Oklahoma, health care providers have access to the Prenatal Psychosocial Assessment Tool (reimbursable by Medicaid), which can be used to screen for environmental and family factors that may contribute to alcohol misuse or depression.

Maternal alcohol use is becoming increasingly important as new research highlights the relationship between prenatal and postpartum maternal alcohol misuse and Sudden Infant Death Syndrome (SIDS).⁷ Previous studies have linked maternal depression with an increased risk of SIDS; it is not known whether or not alcohol use is a contributing factor in the association between depression and SIDS.^{7,8}

For women who may be misusing alcohol before, during, or after pregnancy, the Screening Brief Intervention and Referral to Treatment (SBIRT) is an evidence based public health intervention, effective in reducing alcohol misuse. SBIRT has a “B” recommendation from the United States Preventative Services Task Force, which makes it reimbursable under the Affordable Care Act (ACA). The Oklahoma Department of Mental Health and Substance Abuse Services (ODMHSAS) offers free technical support and training for SBIRT.⁹

A limitation of this study is the under-reporting of alcohol consumption, particularly during pregnancy, due to social desirability bias and lack of information on postpartum alcohol consumption. Another limitation is the lack of data about depressive symptoms before pregnancy, which may contribute to the use or misuse of alcohol before pregnancy. PRAMS can only be used to measure symptoms of self-reported postpartum depression, not confirmed diagnoses. Cause and effect between risk factors and/or outcomes cannot be determined, only relationships and associations can be determined.

Recommendations:

1. Support community and state efforts to reinforce abstinence from alcohol while trying to become pregnant, as well as during pregnancy.
2. Increase public awareness on the harmful effects of alcohol use before and during pregnancy on infant health.
3. Identify and utilize standardized screening tools for assessing alcohol and drug use before, during, and after pregnancy.
4. Provide more treatment opportunities for women with substance abuse and mental health disorders before, during, and after pregnancy.
5. Advocate for a Medicaid state plan amendment for an interconception health waiver to support the provision of necessary care (to include alcohol use and depression screenings) during the postpartum period and beyond.
6. Promote universal depression screening of women of childbearing age, with particular attention to postpartum women and women with a history of alcohol misuse.
7. Encourage providers to use the American Congress of Obstetrics and Gynecology (ACOG) guidelines for preconception health care visits to ensure women are receiving quality preconception health care.
8. Educate health care providers to view every interaction with a female or male of reproductive age as an opportunity for preconception health counseling.
9. Utilize the SBIRT intervention for women misusing alcohol before, during, or after pregnancy.
10. Promote expanded use of psychosocial assessment tools by health care providers and increase the provision of appropriate referrals when partner issues, family stressors, or other psychosocial needs are identified.

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