EDORIUM Journals

Edorium J Matern Child Health 2018;3:100006M01LF2018.
www.edoriumjournals.com/ej/mch

ORIGINAL ARTICLE PEER REVIEWED | OPEN ACCESS

Is mental health status related to alcohol use in pregnant women?

Lindsay M. Friesenhahn, Jessie C. Ramsey, Alee C. Sdao, Mackenzie A. Warner, Jessica L. Hartos

ABSTRACT

Aims: Alcohol consumption during pregnancy is a major health concern. The purpose of this study is to determine whether mental health status during pregnancy is related to alcohol use in pregnant women ages 21–35 years in the general population. Methods: This cross-sectional analysis used 2016 data from the Behavioral Risk Factor Surveillance System (BRFSS) for 418 pregnant females ages 21 to 35. Logistic regression with combined state data was used to assess the relationship between mental health and alcohol use during pregnancy while controlling for tobacco use, educational level, income level, employment status, marital status, ethnicity/race, and age. Results: Across states, few participants reported any alcohol use (6–11%), about one-third reported having mental health issues in the last thirty days (27–40%), and few reported they were current smokers (0–15%). Adjusted results indicated that alcohol use during pregnancy was highly related to mental health status and tobacco use. Conclusion: This study found that mental health status was significantly related to alcohol use during pregnancy for women ages 21–35 years.

Keywords: Alcohol, Mental health, Pregnancy, Tobacco

Lindsay M. Friesenhahn[1], Jessie C. Ramsey[1], Alee C. Sdao[1], Mackenzie A. Warner[1], Jessica L. Hartos[1]

Affiliation: [1]Department of Physician Assistant Studies, University of North Texas Health Science Center, Texas, USA.

Corresponding Author: Jessica L. Hartos, PhD, Camp Bowie Blvd, Fort Worth, Texas 76107, USA; Email: Jessica.hartos@unthsc.edu.

Received: 24 May 2018
Accepted: 09 July 2018
Published: 25 July 2018

How to cite this article

Friesenhahn LM, Ramsey JC, Sdao AC, Warner MA, Hartos JL. Is mental health status related to alcohol use in pregnant women? Edorium J Matern Child Health 2018;3:100006M01LF2018.

Article ID: 100006M01LF2018

****

doi:10.5348/100006M01LF2018OA

INTRODUCTION

Alcohol consumption during pregnancy remains a prominent public health concern because alcohol is a well-established teratogen. Nevertheless, the prevalence of women who drink alcohol while pregnant remains as high as 10% in the United States [1, 2] and up to 88% in other countries [3, 4]. Any level of alcohol consumption is unsafe for fetal development, resulting in adverse birth outcomes [1, 5, 6] such as fetal alcohol syndrome (FAS), which is an entirely preventable condition that affects 2 in 1000 live births in the United States annually [1]. Overall, nearly 2.6 million fetuses are negatively affected by exposure to detrimental alcohol levels, costing society $746 million annually in treatment and care [5].

Alcohol use during pregnancy may be related to socioeconomic status (SES) and demographic factors [1, 2, 4, 5, 7]. Some studies suggest that higher SES is related to alcohol use in pregnant women [2–4, 7], whereas others claim lower SES is associated with maternal drinking [2]. Age and marital status are additional factors with unclear influences. According to Wong et al. [8] women 18-21 years old were more likely to consume alcohol during pregnancy; however, higher age was positively associated with alcohol use in other studies [2–4, 7]. Some studies suggests that unmarried pregnant women are more likely to drink alcohol [4, 7], whereas others suggest there is no association [2, 4].

In addition to alcohol use, poor maternal mental health is a concern for fetal development. Up to two-thirds of pregnant women may experience mental health issues. Depression and anxiety are the most common mental health concerns, with a prevalence of up to 30% and 39%, respectively [9–12]. Antenatal depression and anxiety lead to increased nausea and vomiting in the mother [4] and disrupted behavioral, emotional, and cognitive development in the child [4, 11].

Research shows relations between mental health status and alcohol use during pregnancy, but fails to define the direction of the relationship [2–4, 9]. Some studies reveal that mental health issues lead to antenatal alcohol use [2, 8], whereas other research indicates that alcohol use leads to mental health problems during pregnancy [2]. A review article by Ulrich and Petermann [4] did not find reliable associations between the two variables. Since current research is unclear of this relationship, the aim of this study is to determine whether mental health status during pregnancy is related to alcohol use in pregnant women ages 21–35 years in the general population.

MATERIALS AND METHODS

Design

This was a cross-sectional analysis that used 2016 data from the Behavioral Risk Factor Surveillance System (BRFSS), which is an annual study sponsored by the Centers for Disease Control and Prevention (CDC) [13]. BRFSS was established in 1984 and surveys more than 400,000 individuals every year. Topics in the survey include health-related risk behaviors, chronic health conditions, and use of preventative services in adults 18 years and older. Data is collected from all 50 US states, The District of Columbia, and three US territories using random digit dialing techniques for both landlines and cellular phones. The CDC compiles the data and allows researchers access to de-identified data to conduct secondary data analyses. This study was given exempt status by The University of North Texas Health Science Center.

Sample

The sample included currently pregnant females ages 21–35 years old in Florida (N=141), Michigan (N=63), Minnesota (N=84), and New York (N=130). These states were selected because they had a higher number of pregnant women and a higher prevalence of poor mental health and alcohol use compared to other states [14, 15].

Data

Alcohol use, the outcome, was measured in BRFSS as "yes" or "no" to the question, "Have you consumed any alcohol in the past 30 days?" Although BRFSS has a variable for the average number of alcoholic drinks per day in the past 30 days, few pregnant women report drinking; thus, the mean for average number of drinks per week is severely skewed. However, because any drinking during pregnancy is a risk, the dichotomous variable for yes/no drank in the past 30 days is of interest.

The factor of interest, mental health status, was measured by asking respondents, "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" Responses were measured quantitatively from 0–30 days. The answers to this question were then reversed to reflect "good" mental health and due to the responses being severely skewed (Florida M = 26.86, SD = 7.01, R = 0–30; Michigan M = 26.44, SD = 7.65, R = 0–30; Minnesota M = 28.06, SD = 5.31, R = 0–30; New York M = 26.55, SD = 7.27, R = 0–30), we categorized responses as "30 days" of good mental health versus "less than 30 days," which reflect reporting no mental health issues including stress, depression, or problems with emotions in the past 30 days vs. reporting mental health issues in the past 30 days.

The control variables were tobacco use, educational level, income level, employment status, marital status, ethnicity/race, and age. Tobacco use was measured as "current smoker" or "not current smoker." Educational level was measured as "graduated college/technical school" or "did not graduate college/technical school." Income level was measured as "$50,000 or more" or "less than $50,000." Marital status was measured as "married" or "not married." Ethnicity/race had a small number in most of the race categories so we collapsed it into three categories: "white, non-Hispanic," "Hispanic," and "other." Age was categorized as "21–25," 26–30," and "31–35."

Analysis

Frequency distributions by state were used to describe the samples and identify any discrepancies with the distributions of variables. Because multiple categories within variables had small numbers in each state, we combined state data for adjusted analysis. Using the combined state data, multiple logistic regression analysis assessed the relationship between alcohol use and mental health status in pregnant women after controlling for tobacco use, educational level, income level, employment status, marital status, ethnicity/race, age, and state. The resulting adjusted odds ratios (AORs) represent the odds that those in the different levels of a factor are more likely

(if AOR>1) or less likely(if AOR<1; to interpret: divide 1 by the AOR) to have the outcome (30 days of good mental health) when compared to the referent group identified for that factor. Any observations for variables of interest with missing data were excluded from multivariable analysis. All analyses were conducted in STATA 15 (Copyright 1985–2017 StataCorp LLC).

RESULTS

Descriptive statistics

Table 1 lists participant characteristics for pregnant females between the ages of 21 and 35-years-old in Florida, Michigan, Minnesota, and New York. Across states, few participants reported any alcohol use (6–11%) and about one-third reported having mental health issues in the last thirty days (27–40%). Few reported they were current smokers (0–15%). For socioeconomic status, there was a wide variation in participants who had an income lower than $50,000 (31–74%), did not graduate college or technical school (43–75%), and reported current employment (48–74%). For demographics, between half and three-quarters of the participants reported being married (50–76%) and there was a moderate to high amount of white, non-Hispanic pregnant females (42–84%). The ages of the participants were similarly distributed across the following three categories: 21 to 25 years (19–35%), 26 to 30 years (33–43%), and 31 to 35 years (32–38%).

Table 1: Participant Characteristics by State

Variable	Florida (N=141)	Michigan (N=63)	Minnesota (N=84)	New York (N=130)
	N (%)	N (%)	N (%)	N (%)
Alcohol Use	132 (94)	62 (98)	81 (96)	128 (98)
None	124 (94)	56 (90)	75 (93)	114 (89)
Any	8 (6)	6 (10)	6 (7)	14 (11)
Good Mental Health Status	141 (100)	63 (100)	84 (100)	130 (100)
30 days	94 (67)	38 (60)	61 (73)	83 (64)
Less than 30 days	47 (33)	25 (40)	23 (27)	47 (36)
Tobacco Use	137 (97)	62 (98)	81 (96)	129 (99)
Current smoker	11 (8)	9 (15)	0 (0)	14 (11)
Not current smoker	126 (92)	53 (86)	81 (100)	115 (89)
Educational Level	140 (99)	63 (100)	83 (99)	130 (100)
Graduated college/technical school	35 (25)	21 (33)	47 (57)	47 (36)
Did not graduate college/technical school	105 (75)	42 (67)	36 (43)	83 (64)
Income Level	114 (81)	54 (86)	75 (89)	111 (85)
$50,000 or more	30 (26)	23 (43)	52 (69)	53 (48)
Less than $50,000	84 (74)	31 (57)	23 (31)	58 (52)
Employment Status	141 (100)	63 (100)	84 (100)	130 (100)
Employed	80 (57)	36 (57)	62 (74)	63 (48)
Not employed	61 (43)	27 (43)	22 (26)	67 (52)
Marital Status	141 (100)	63 (100)	84 (100)	130 (100)
Married	71 (50)	35 (56)	64 (76)	83 (64)
Not married	70 (50)	28 (44)	20 (24)	47 (36)
Ethnicity/Race	139 (99)	61 (97)	84 (100)	128 (98)
White, non-Hispanic	59 (42)	51 (84)	66 (79)	88 (69)
Hispanic	53 (38)	2 (3)	5 (6)	21 (16)
Other	27 (19)	8 (13)	13 (15)	19 (14)
Age	141 (100)	63 (100)	84 (100)	130 (100)
21–25	50 (35)	17 (27)	16 (19)	36 (28)
26–30	46 (33)	23 (37)	36 (43)	45 (35)
31–35	45 (32)	23 (37)	32 (38)	49 (38)

Adjusted Statistics

As shown in Table 2, the results of the multiple logistic regression analysis using combined data for pregnant females ages 21–35 in Florida, Michigan, Minnesota, and New York indicated that after controlling for all other variables in the model, good mental health status during pregnancy was inversely related to alcohol use. Participants who reported 30 days of good mental health were about 3.5 times less likely to report alcohol use compared to those who reported less than 30 days of good mental health. In addition, compared to non-smokers, current smokers were about six times more likely to report alcohol use.

Table 2: Adjusted Results across States

Predicting Alcohol Use (Any vs. None in the past 30 days)	Combined States		
	AOR	95% CI	
		Low	High
Good Mental Health Status			
Less than 30 days	ref	-	-
30 days	0.28	0.12	0.63
Tobacco Use			
Not current smoker	ref	-	-
Current smoker	6.03	1.80	20.18
Educational Level			
Did not graduate college/technical school	ref	-	-
Graduated college/technical school	2.06	0.75	5.63
Income Level			
Less than $50,000	ref	-	-
$50,000 or more	4.95	1.53	16.09
Employment Status			
Not employed	ref	-	-
Employed	1.96	0.74	5.19
Marital Status			
Not married	ref	-	-
Married	0.43	0.16	1.19
Ethnicity/Race			
White, non-Hispanic	ref	-	-
Hispanic	2.57	0.75	8.86
Other	1.74	0.57	5.34
Age			
21–25	ref	-	-
26–30	1.28	0.42	3.97
31–35	1.00	0.31	3.17
State			
Florida	ref	-	-
Michigan	1.66	0.55	5.01
Minnesota	1.24	0.41	3.71
New York	1.90	0.77	4.71

Note: AOR=adjusted odds ratio; 95% CI=95% confidence intervals; ref=referent group; boldface indicates significance (AORs with 95% CI that do not include 1.00 are significant)

DISCUSSION

The purpose of this study was to determine whether mental health status during pregnancy is related to alcohol use in pregnant women ages 21–35 years in the general population. The findings indicated that those who had 30 consecutive days of good mental health are about 3.5 times less likely to have used any alcohol in the last 30 days than those who had less than 30 consecutive days of good mental health. These findings are consistent with prior research suggesting that mental health issues lead to alcohol consumption during pregnancy [2, 8]. However, other literature found no relationship [4]. Because prior research was conducted in other countries [1, 2] where alcohol consumption during pregnancy has a much higher prevalence than in the U.S. [3, 4], differences in findings may reflect cultural differences regarding alcohol consumption during pregnancy [1, 2]. The results of this study also indicated that those who reported they were current smokers were about 6 times more likely to have consumed any alcohol in the last 30 days than those who reported they were not current smokers, which is consistent with prior research findings [4, 10]. This is a problem because tobacco use is also a known teratogen [16].

Limitations

This study used BRFSS 2016 data, which allowed a large enough sample to assess the relationship between mental health and alcohol use in such a specific target population. A strength of this study was that the measurement of pregnancy status, mental health status, and alcohol consumption were current. However, some relevant information was lacking. For instance, we had no information on the week of pregnancy, severity and duration of any mental health issues, or the management of any mental health issues, including medication use. Since research tends to focus on postpartum mental health [10], future research should include mental health status and management strategies over the course of the entire pregnancy. In addition, given the sensitive nature of the data collected, women may be reluctant to respond honestly to questions regarding alcohol consumption or mental health issues during pregnancy. If so, the prevalence of pregnant women who actually consume alcohol or experience mental health issues during pregnancy may be higher than reflected in the data.

Clinicians may expect approximately 1 out of 10 women to report any alcohol use during pregnancy and about one-third to have mental health issues in the last thirty days. According to the CDC [17], pregnant women should be assessed for alcohol use, but guidelines do not specify how often to screen. In addition, current recommendations for mental health screening indicate that women should be screened at least once during the course of pregnancy [18]. However, because the results of this study indicate that mental health is highly related to alcohol use during pregnancy, providers should screen and provide education for both alcohol use and mental health at each visit instead of just once during the pregnancy, and make referrals for psychiatry and substance abuse programs as needed. Moreover, clinicians may find that few pregnant women smoke; however, since tobacco use is also highly related to alcohol consumption in pregnant women, providers should screen for tobacco use at each visit and provide education and resources for smoking cessation programs as needed.

CONCLUSION

The results of this population-based study may generalize to pregnant women ages 21-35 years in obstetrics. Clinicians in obstetrics and gynecology may expect approximately 1 out of 10 women to report any alcohol use during pregnancy, about one-third to have mental health issues in the last 30 days, and about 1 out of 7 to smoke. Because these factors are problematic and highly related, providers should screen and counsel all pregnant women about alcohol use, mental health, and tobacco use at each appointment, and provide additional resources and referrals to psychiatry or smoking cessation programs as needed.

REFERENCES

1. Crawford-Williams F, Fielder A, Mikocka-Walus A, Esterman A. A critical review of public health interventions aimed at reducing alcohol consumption and/or increasing knowledge among pregnant women. Drug Alcohol Rev 2015 Mar;34(2):154–61.
2. Skagerström J, Chang G, Nilsen P. Predictors of drinking during pregnancy: A systematic review. J Womens Health (Larchmt) 2011 Jun;20(6):901–13.
3. Niclasen J. Drinking or not drinking in pregnancy: The multiplicity of confounding influences. Alcohol Alcohol 2014 May–Jun;49(3):349–55.
4. Ulrich F, Petermann F. Consequences and possible predictors of health-damaging behaviors and mental health problems in pregnancy - A review. Geburtshilfe Frauenheilkd 2016 Nov;76(11):1136–56.
5. Bhuvaneswar CG, Chang G, Epstein LA, Stern TA. Alcohol use during pregnancy: Prevalence and impact. Prim Care Companion J Clin Psychiatry 2007;9(6):455–60.
6. Centers for Disease Control and Prevention (CDC). Alcohol use and your health. [Available at: https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm]
7. Lange S, Quere M, Shield K, Rehm J, Popova S. Alcohol use and self-perceived mental health status among pregnant and breastfeeding women in Canada: A secondary data analysis. BJOG 2016 May;123(6):900–9.

8. Wong M, Myer L, Zerbe A, et al. Depression, alcohol use, and stigma in younger versus older HIV-infected pregnant women initiating antiretroviral therapy in Cape Town, South Africa. Arch Womens Ment Health 2017 Feb;20(1):149–59.
9. Goebert D, Morland L, Frattarelli L, Onoye J, Matsu C. Mental health during pregnancy: A study comparing Asian, Caucasian and Native Hawaiian women. Matern Child Health J 2007 May;11(3):249–55.
10. Lee AM, Lam SK, Sze Mun Lau SM, Chong CS, Chui HW, Fong DY. Prevalence, course, and risk factors for antenatal anxiety and depression. Obstet Gynecol 2007 Nov;110(5):1102–12.
11. Satyanarayana VA, Lukose A, Srinivasan K. Maternal mental health in pregnancy and child behavior. Indian J Psychiatry 2011 Oct;53(4):351–61.
12. Staneva A, Bogossian F, Pritchard M, Wittkowski A. The effects of maternal depression, anxiety, and perceived stress during pregnancy on preterm birth: A systematic review. Women Birth 2015 Sep;28(3):179–93.
13. Center for Disease Control and Prevention (CDC). About BRFSS. [Available at: https://www.cdc.gov/brfss/about/index.htm]
14. Center for Disease Control and Prevention (CDC). BRFSS Web enabled analysis tool. [Available at: https://nccd.cdc.gov/weat/index.html#/crossTabulation/selection/2016]
15. Center for Disease Control and Prevention (CDC). Chronic disease indicators (CDI) data. [Available at: https://nccd.cdc.gov/cdi]
16. Center for Disease Control and Prevention (CDC). Smoking during pregnancy. [Available at: https://www.cdc.gov/tobacco/basic_information/health_effects/pregnancy/index.htm]
17. Centers for Disease Control and Prevention (CDC). Fetal alcohol spectrum disorders (FASDs). [Available at: https://www.cdc.gov/ncbddd/fasd/interventions.html]
18. The American college of obstetrics and gynecology. Depression and postpartum depression: Resource overview. [Available at: https://www.acog.org/Womens-Health/Depression-and-Postpartum-Depression]

****

Author Contributions

Lindsay M. Friesenhahn – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Jessie C. Ramsey – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Alee C. Sdao – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Mackenzie A. Warner – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Jessica L. Hartos – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this study.

Conflict of Interest

Authors declare no conflict of interest.