

# A comparative analysis of risks associated with tobacco, alcohol, and illicit drug use during pregnancy in a Population of African American mothers in the District of Columbia

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## Abstract:

The use of substances during pregnancy continues to represent a significant challenge to health providers caring for high risk populations. More information is needed on the comparison of risk exposure to tobacco, alcohol and illicit drugs. Such information would be useful to health providers and can be used to educate pregnant women receiving care. We followed 1,044 African American women during pregnancy if they were >18 years, spoke English, <28 weeks pregnant and screened positively for smoking, environmental tobacco smoke, depression or intimate partner violence. Of mothers with known pregnancy outcomes (n=909), 18.3% smoked during pregnancy, 21.9% admitted to consuming alcohol during pregnancy and 12.2% admitted to illicit drug use during pregnancy. Compared to US African American rates for 2003, the women in this study who smoked tobacco had strikingly high rates of neonatal death (1.8% vs. 0.9%), of perinatal death (3.6% vs. 1.2%) and low birth weight (17.9% vs. 13.4%). For women using illicit drugs during pregnancy, low birth weight was 20.4% vs. 13.4% for the US African Americans in 2003. Health providers need to screen pregnant women for tobacco smoking and illicit drug use.

## 1. Background:

### NIH-DC Initiative

A congressionally mandated research project to reduce infant mortality in minority populations in the District of Columbia through cooperative community-based studies and interventions.

#### Collaborating Institutions:

- Children's National Medical Center
- George Washington University Medical Center
- Georgetown University Medical Center
- Howard University Hospital
- Eunice Kennedy Shriver National Institute of Child Health & Human Development
- National Center on Minority Health and Health Disparities
- RTI International

## Project DC-HOPE

An RCT to evaluate the intervention program of the **Healthy Outcomes of Pregnancy Education (HOPE)** in minority women in the District of Columbia reporting at least one of the following four risks:

- Cigarette Smoking
- Environmental Tobacco Smoke Exposure (ETSE)
- Depression
- Intimate Partner Violence (IPV).

## Participants

Women were approached for screening when presenting themselves at prenatal care (PNC) visits.

Eligible Participants (n=1,044) at screening:

- African-American/Black women
- At least 18 years of age, English speaking
- Enrolled by 28 weeks gestation
- Received PNC at one of the 6 participating clinics in Washington, DC between 2001 and 2003
- Reported at least one risk factor

## Baseline Characteristics

Women were interviewed at baseline enrollment. Two follow-up interviews were conducted at 22-26 and 34-38 weeks of gestation (2nd & 3rd trimester). 25 years mean age at recruitment

- 19 weeks mean estimated gestational age
- 76% single/separated/divorced/widowed
- 70% ≥ HS education
- 37% employed
- 78% received Medicaid
- 82% received WIC (Women, Infant & Children)

## 2. Objective:

Investigate the relationship between pregnancy outcomes and exposure to various combinations of tobacco, alcohol and illicit drug use during pregnancy.

## 3. Hypothesis:

Substance use during pregnancy will increase the likelihood of poor pregnancy outcomes.

## 4. Study Population:

Mothers recruited to our study with known pregnancy outcomes (n=909) who reported substance use (tobacco, alcohol and illicit drugs) during pregnancy.

## 5. Design/Methods:

Bivariate comparisons of mothers with substance use were conducted using Chi-square and t tests. Pregnancy outcomes were miscarriage, early and late fetal death, perinatal and neonatal death, low and very low birth weight (LBW, VLBW) and preterm and very preterm birth (PTB, VPTB).

## 6. Results:

Of the 909 mothers with known pregnancy outcomes, during pregnancy:

- 18.3% smoked tobacco
- 21.9% admitted to consuming alcohol
- 12.2% admitted to illicit drug use.

**Table 1. Bivariate Comparisons of Pregnancy Outcomes for women with the three Substance Use during Pregnancy**

Pregnancy Outcomes	Substance Use during Pregnancy			US African American Rates 2003 %
	Tobacco (n=166) %	Alcohol (n=199) %	Illicit Drugs (n=111) %	
Miscarriage	2.4	2.5	1.8	---
Early Fetal Death	1.2	1.5	0.0	---
Late Fetal Death	0.6	0.0	0.0	0.5
Perinatal Death	3.6	1.5	0.9	0.9
Neonatal Death	1.8	0.0	0.9	1.2
Low Birth Weight (LBW)	17.9	15.3	20.4	13.4
Very Low Birth Weight (VLBW)	1.3	2.2	1.9	3.1
Preterm Birth (PTB)	17.5	15.7	15.2	17.6
Very Preterm Birth (VPTB)	2.6	3.1	4.8	---

A striking finding in our results is high pregnancy loss rate across all three categories within this population. Most significantly is a perinatal mortality rate of 36/1000 live births associated with smokers and 20% low birthweight rate among illicit drug users.

**Table 2. Pregnancy Outcomes by Category of Multiple Substance Exposure**

Pregnancy Outcomes	Tobacco Use Only (n=100)	Tobacco & Alcohol Use (n=43)	Tobacco & Illicit Drug Use (n=55)
Miscarriage	3.7%	2.6%	0%
Neonatal Death	2.5%	0%	2.0%
Live Births	88.9%	92.1%	96.1%
Gestational Age at Delivery (wks)	36 ± 7	37 ± 5	38 ± 3
Infant Birth Weight (gms)	2919 ± 577	3168 ± 518	2998 ± 703
Low Birth Weight (<2500 gms)	19.4%	5.7%	24.5%
Very Low Birth Weight (<1500 gms)	3.0%	0.0%	0.0%
Preterm Birth (<37 wks)	21.1%	17.1%	12.5%
Very Preterm Birth (<33 wks)	4.2%	0.0%	2.1%

> Comparisons were significant (p<0.05) only for infant weight when comparing tobacco users to tobacco and alcohol users and also for gestational age at delivery comparing tobacco and alcohol users to tobacco and drug users.

> Comparison of LBW for smokers to those smoking and using alcohol was significant (p<0.10).

**Women using tobacco during pregnancy had higher chances of miscarriage, neonatal deaths, VLBW, PTB & VPTB. Women using tobacco and illicit drug use during pregnancy had higher chances of LBW.**

## 7. Conclusions:

Screening for smoking tobacco, alcohol use, and illicit drug use during pregnancy should continue to receive high priority towards the improvement of maternal and infant outcomes. Health care providers need to be aware of factors such as smoking tobacco, alcohol use, and illicit drug use during pregnancy.

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