

# A Comparison of Opioid Using Women Attending High Risk Prenatal Clinic versus a Regular OB Clinic

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## Abstract

Data were obtained from 142 pregnant women who attended a High Risk Prenatal Clinic and compared to those obtained from 144 women attending the regular obstetric (OB) clinic. Of those, women who abused heroin were compared to those who abused prescription drugs, and those who abused more than one prescription drug. Groups were compared on maternal characteristics that included age, race, marital status, and medical problems as well as drug and alcohol, cigarette using behaviors. The women who attended the High Risk Prenatal Clinic were significantly different from the women attending the regular OB clinic however, the women who abused heroin differed from their prescription abusing counterparts only on incidence of Hepatitis C. These data indicate the importance of providing specialized care for pregnant substance abusing women that addresses these high risk problems.

**Keywords:** Opioid; Heroin; Pregnant women; Drug and alcohol

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## Introduction

According to the 2015 National Survey of Drug Use and Health (NSDUH) [1], when interviewed about their drug use during the past year, 0.4% (155,000) women between the ages of 18 to 25 identified having a heroin use disorder. These findings are similar to data reported from 2008-2014. Other NSDUH findings report that 1.2% (427,000) women age 18-25 identified an opioid prescription drug use disorder. Even more alarming is that among pregnant women, 0.9% reported using opioids during the past 30 days during 2015. The 2007-2012 findings from the NSDUH indicate that past month opioid misuse was more common among younger groups (15-17 years=2.8%, 18-25=1.5%, and 26-34=0.5%). This is a significant problem because each of these groups includes women of childbearing age. Because these data are self-reported, they may be lower than actual amounts [2].

Opioid use among pregnant women jeopardizes their pregnancy and birth outcomes. Elevated rates of preterm birth (<37 weeks) at three times national average have been reported, as well as low birth weight (<2500 g), admission to neonatal intensive care [3] and need for extended treatment for Neonatal Abstinence Syndrome, which afflicts from 45% to 94% of newborns [4]. The

effects of opioid dependence can have synergistic deleterious effects when they are in conjunction with other problems of drug using pregnant women including medical problems, sexually transmitted diseases, psychiatric disorders and polysubstance abuse [5]. Treatment at a high risk obstetrics clinic is critical to alleviate these problems.

As use of heroin has increased [6] it's important to know the best clinical practice for opioid addicted pregnant women. The treatment of choice for pregnant women who are dependent on opioids is a regimen of opioid agonists (e.g. Methadone, Suboxone) to reduce physiological withdrawal and the odds of potential miscarriage associated with withdrawal [7]. To improve reproductive outcomes of high risk substance abusing women, high risk prenatal care is critical. In order to protect the pregnancy from spontaneous abortion, many obstetricians prescribe Methadone or Suboxone to the pregnant women [8]. Being maintained on Methadone or Suboxone for the duration of the pregnancy is relatively safe [2,9] and is the treatment of choice for protecting the pregnancy [7]. These agonists protect the women from needing to acquire street opioids that may be adulterated with dangerous substances and use potentially contaminated needles [10]. Physicians who prescribe these

medications can oversee medical care of these women, including detoxification after delivery [8]. The women are maintained at the lowest dose of medication that prevents physiological withdrawal and cravings. The newborn is slowly weaned from the opioid in a step-down approach. A High Risk Clinic with substance abuse counselors who provide specialized care can support women who have been prescribed a treatment regimen that includes an opioid agonist. As Methadone and Suboxone are potentially physiologically addictive, following the regimen needs to be reinforced by expert clinicians who can medically manage withdrawal symptoms.

Entering prenatal care is an opportune time to comprehensively assess pregnant women; attention should be paid to concurrent psychiatric and medical illnesses. Blanchard and Lurie [11] reported that in a community sample of 6,722 patients, many of whom were not using drugs, on average, 15.8% reported having "been looked down on" or "treated with disrespect" by care providers. This perception of disrespect is deleterious to treatment seeking among pregnant opioid addicted women as post-partum women reported that stigma contributed to their decision not to access HIV treatment after birth of the baby [12]. Their decision is compounded by the finding that physicians are less likely to prescribe a Highly Active Antiretroviral Therapy (HAART) if a woman has an alcohol problem, uses drugs intravenously, or has a mental illness [13] and thus the women are more likely to have high viral loads [14]. Armstrong et al. [15] reported that women in focus groups shared that clinicians had called them "junkies" and "crack ladies" and therefore were reluctant to seek treatment at a regular prenatal care. One woman said "In a place like (a High Risk Clinic)...you don't have to live a double life". Therefore, high risk prenatal clinics that engage pregnant opioid addicted women in a non-judgmental way, retain them in obstetric treatment, and encourage them to follow instructions are necessary to protect the woman's health and the viability of the pregnancy.

## Methods

### Data source

The present study conducted analyses of cross-sectional data collected during a 12 month period from a university hospital in a Midwestern city. Obstetric data from charts of two subgroups of pregnant women were extracted from the clinic intake assessment. The sample consisted of charts from clients who attended the hospital's High Risk Prenatal Clinic (N=142) and charts from those who attended the hospital's general obstetric (OB) clinic during the same 12-month period (N=144). Data from the regular OB clinic were obtained from the hospital data archives. The women's data were first collected from the High Risk Clinic charts and then matched to the reproductive history data from the general OB clinic charts on parity. Parity was chosen as the referent because women who are drug users typically have more pregnancies than other women. Using systematic random sampling, the intake data from every third women in the general OB database were collected, de-identified, cleaned, coded and entered into the SPSS database. This study was approved by the Institutional Review Board from the hospital [16].

The High Risk Clinic treats pregnant women with a recent or current substance abuse problem and/or women with HIV. The objective is to provide comprehensive services to this vulnerable and disenfranchised group. The High Risk Clinic provides comprehensive prenatal care, referrals to substance abuse treatment or for Infectious Disease services and women are offered educational sessions on healthy lifestyles, childbirth preparation, parenting skills, family relationships, domestic violence prevention, relapse prevention, as well as nutrition referrals and social work services. The social worker works with the women to facilitate concrete services and coordinates services with child welfare workers. Patients in the clinic are referred for voluntary admission to the High Risk Clinic but may refuse to receive services, opting for care at the regular obstetrics clinic.

Because prenatal care is especially critical for women who abuse substances, it is always imperative that clinic counselors thoroughly assess obstetric patients for substance use. Historically, substance abuse counselors in a medical setting have provided referrals for concrete resources, treatment and advocacy [17] and work within those areas to provide services to families struggling with potentially poor pregnancy outcomes. At this High Risk Clinic, women who abuse drugs and women who are infected with the AIDS virus are treated obstetrically.

### Data analyses

Maternal characteristics and behaviors of both samples of pregnant women attending the prenatal clinics were reported by mean (standard deviation) for continuous variables, and frequencies (percentages) for categorical variables. The comparison of health outcomes of opioid users during the past six months versus non-opioid users during the past six months was conducted using Chi-square ( $\chi^2$ ) test because all the indicators of health outcomes (medical complications, STDs) were categorical variables. A One-Way Analysis of Variance (ANOVA) was conducted to compare outcomes of heroin only users vs. prescription only drug abusers vs. abuse of two or more prescriptions. The p-values associated with  $\chi^2$  and F tests were reported with the significance level of 0.05. All analyses were performed using SPSS version 23.0.

## Results

### Maternal characteristics

Data were obtained from the 142 pregnant women who attended a High Risk Prenatal Clinic and compared to those obtained from the 144 women attending the regular obstetrics clinic (**Table 1**). The pregnant women attending the High Risk Clinic were younger than those attending the regular clinic (26.58 (5.12) vs. 32.23 (5.73) years, range 18-39,  $p<0.001$ ), where predominantly Caucasian versus African American or African/Asian/Latina (76.9% vs. 17.9% vs. 5.2%,  $p=0.006$ ) and were most likely to be single than married or divorced/widowed (72.4% vs. 22.4% vs. 5.2%,  $p<0.001$ ). High risk women were more likely single compared to regular OB women (72.4% vs. 36.1%), who were more likely to be married (61.8% vs. 22.4%).

**Table 1** Characteristics of women attending the High Risk versus the general OB clinic.

Demographic Variables	High Risk Prenatal Clinic (N=142)	General OB Clinic (N=144)	Test value	p-value
Maternal age	26.58 (5.12)	32.23 (5.73)	t (284)=-8.78	0.000
Number pregnancies	3.60 (1.90)	3.37 (2.12)	t (270)=0.94	0.349
Week prenatal care began	19.90 (9.15)	22.08 (10.56)	t (253)=-1.77	0.080
Race (%)				
Caucasian	76.9	59.7	X <sup>2</sup> (2)=10.341	0.006
African American	17.9	35.1		
Other	5.2	5.2		
Marital status (%)				
Single	72.4	36.1	X <sup>2</sup> (2)=44.14	0.000
Marital	22.4	61.8		
Other	5.2	2.1		
Medical complications (%)				
None	38.6	69.4	X <sup>2</sup> (7)=88.24	0.000
High Blood Pressure	5.3	0.7		
Diabetes	4.5	10.4		
Obese	0.0	10.4		
Hepatitis C	22.0	0.0		
Asthma	6.8	0.0		
Anemia	3.0	4.2		
Other	19.7	4.9		
Sexually transmitted disease (%)	20.4	2.1	X <sup>2</sup> (1)=23.90	0.000
HIV (%)	19.1	0.0	X <sup>2</sup> (1)=30.23	0.000
Date of last drink (%)				
Doesn't drink	84.1	76.5	X <sup>2</sup> (3)=5.746	0.125
Within past 30 days	10.9	12.9		
Past 1-6 months	2.2	8.3		
More than 6 months ago	2.9	2.3		
Nicotine use past 30 days (%)	65.9	6.9	X <sup>2</sup> (1)=105.88	0.000
Number cigarettes/day	10.03 (8.20)	0.01 (0.09)	t (223)=14.28	0.000
Any illicit drug use (%)	77.7	2.8	X <sup>2</sup> (1)=162.22	0.000
Drug use past 6 months (%)	65.4	2.8	X <sup>2</sup> (1)=122.11	0.000
Marijuana use (%)				
None	71.6	97.9	X <sup>2</sup> (3)=17.12	0.001
Within 30 days	23.9	2.1		
Past 1-6 months	4.5	0.0		
More than 6 months ago	0.0	0.0		
Opiate use (%)				
None	27.0	98.6	X <sup>2</sup> (4)=152.35	0.000
Past 6 months	73.0	1.4		
Heroin use (%)				
None	49.2	100.0	X <sup>2</sup> (3)=98.32	0.000
Within 30 days	35.4	0.0		
Past 1-6 months	13.8	0.0		
More than 6 months ago	1.5	0.0		
Prescription use (%)				
None	31.3	100.0	X <sup>2</sup> (3)=131.90	0.000
Within 30 days	46.9	0.0		
Past 1-6 months	20.3	0.0		
More than 6 months ago	1.6	0.0		
Oxycodone use (%)				
None	59.7	100.0	X <sup>2</sup> (3)=75.18	0.000
Within 30 days	25.8	0.0		
Past 1-6 months	12.9	0.0		
More than 6 months ago	1.6	0.0		

Note: Frequencies are represented as Mean (SD) unless noted; p<0.05\*, p<0.01\*\*, p<0.001\*\*\*

**Table 2** Health outcomes among opioid users versus non-users attending the high risk clinic.

Demographic Variables	No opioid use past six months (N=24)	Opioid use past six months (N=65)	Test value	p-value
Age	26.42 (4.91)	26.63 (4.39)	t (87)=-0.198	0.844
Race/Ethnicity (%)				
Caucasian	50.0	93.4	$\chi^2(2)=20.695$	0.000**
African American	40.9	4.9		
Other	9.1	1.6		
Marital status (%)				
Single	95.5	68.3	$\chi^2(2)=6.527$	0.038*
Married	4.5	27.0		
Other	0.0	4.8		
Number of pregnancies	3.17 (1.93)	3.82 (1.97)	t (87)=-1.388	0.169
Gestational week care began	19.85 (9.20)	21.0 (9.07)	t (82)=-0.510	0.611
Number visits at Clinic	5.87 (3.29)	5.37 (3.33)	t (84)=0.623	0.535
Any sexually transmitted disease (%)	20.8	18.8	$\chi^2(1)=0.049$	0.826
Any medical problems (%)	29.1	70.9	$\chi^2(1)=0.234$	0.628
Types of medical problems (%)				
Diabetes	18.8	2.6	$\chi^2(5)=12.455$	0.029*
Hepatitis C	12.5	48.7		
Asthma	25.0	5.1		
Anemia	6.3	7.7		
Migraines	25.0	28.2		
Other	12.5	7.7		
HIV (%)	26.1	0.0	$\chi^2(1)=16.872$	0.000**
Taking opioid agonist (%)				
No	75.0	18.8	$\chi^2(2)=25.019$	0.000**
Methadone	20.8	51.6		
Suboxone	4.2	29.7		
Any drug use past six months	22.6	77.4	$\chi^2(1)=14.348$	0.000**
Number cigarettes/day	8.36 (6.86)	12.49 (7.68)	t (56)=-1.634	0.108

Note: Frequencies are represented as Mean (SD) unless noted;  $p < 0.001^{**}$ ,  $p < 0.05^*$

Medical data demonstrated substantial differences between the women attending the two clinics. More women in the High Risk Clinic had been diagnosed with a medical problem (61.4% vs. 30.6%,  $p < 0.001$ ). They were more likely to be diagnosed with Hepatitis C (22.0% vs. 0.0%), asthma (6.8% vs. 0.0%) and high blood pressure (5.3% vs. 0.7%). Women who attended the regular OB clinic were more likely to have been diagnosed with diabetes (10.4% vs. 4.5%), obesity (10.4% vs. 0.0%) and anemia (4.2% vs. 3.0%). The high risk women were also more likely to have a sexually transmitted disease (STD) (20.4% vs. 2.1%,  $p < 0.001$ ) and to have HIV (19.1% vs. 0.0%,  $p < 0.001$ ).

Women attending the High Risk Prenatal Clinic were more likely to have used nicotine during the past 30 days (65.9% vs. 6.9%,  $p < 0.001$ ) and on average to smoke 10.03 (8.20) cigarettes/day compared to women attending the regular OB clinic who reported smoking 0.01 (0.09) cigarettes per day ( $p < 0.001$ ). More women attending the regular OB clinic drank during the past six months compared to the high risk women (21.2% vs. 13.1%), but there were no significant differences in drinking within the past 30 days among high risk vs. regular OB patients (10.9% vs. 12.4%). Significant difference emerged between any illicit drug uses among the high risk women compared to the women attending the regular OB clinic (77.7% vs. 2.8%). More women attending the High Risk Clinic reported drug use during the past six months than women attending the regular OB clinic (65.4% vs. 2.8%,

$p < 0.001$ ). Of the high risk women, 28.4% reported marijuana use compared to 2.1% of women attending the OB clinic ( $p < 0.001$ ). Among women in the High Risk Clinic 73.0% reported opioid use during the past six months compared to women attending the regular OB clinic (1.4%) ( $p < 0.001$ ). Of those women, 49.2% reported heroin use, 67.2% reported prescription drug abuse, and with 38.7% reporting Oxycodone use. The type of opioid used by the two women attending the regular OB clinic (1.4%) was not specified.

Data from high risk women who reported opioid use were compared to the pregnant women attending the High Risk Clinic who didn't use opioids. As shown in **Table 2**, women who had used opioids during the past six months were significantly different from their counterparts who didn't use opioids, in terms of the type of medical complications ( $p = 0.029$ ). Women with opioid use were more likely to be diagnosed with Hepatitis C (49.7% vs. 12.5%) while the women who did not use opioids during the past six months were more likely to have diabetes (18.8% vs. 2.6%) and asthma (25.0% vs. 7.7%). The mean difference in other health outcomes between opioid users and non-opioid users were not substantially different. Of the women who had not used an opioid during the past six months, 25.0% were maintained on agonist therapy compared to the 81.2% of those who had used opioids during the past six months ( $p < 0.001$ ). Methadone had been prescribed to 20.8% of the women who had not used

opioids within the past six months and 51.6% of the women who had used. No differences emerged among either group of women in the High Risk Clinic in the number of cigarettes smoked per day, gestational age when prenatal care began, number of prenatal visits, or having any STD. Compared to women who had used opioids during the past six months, more women who had not, were diagnosed with HIV (0.0% vs. 26.1%,  $p < 0.001$ ).

One-way ANOVA was conducted to evaluate the null hypothesis that there is no difference among drug using pregnant women in incidence of Hepatitis C, STDs, time since last drink, number cigarettes per day, any psychiatric diagnosis, and other medical problems. The independent variable, type of drug used included three groups, heroin only ( $M=0.59$ ,  $SD=0.51$ ,  $n=17$ ), prescription abuse only ( $M=0.10$ ,  $SD=0.31$ ,  $n=30$ ) and at least two prescription drugs ( $M=0.33$ ,  $SD=0.492$ ,  $n=12$ ). The assumption of homogeneity of variance was tested and found problematic using Levene's test ( $F(2, 56)=16.04$ ,  $p < 0.001$ ) because the  $p$ -value was greater than 0.05. The Welch tests of Equality of Means was used to determine whether there were differences between the groups' means, with a significant difference in the incidence of Hepatitis C ( $F(2, 22.41)=6.83$ ,  $p=0.005$ ). Turkey post-hoc analysis was conducted to compare multiple independent variables. Multiple comparisons indicated that differences emerged between women who abused heroin only versus prescription drug abuse only (Mean difference=0.488,  $SE=0.125$ ,  $p=0.001$ ). However, the active differences in mean scores between groups were small based on Cohen's (1988) conventions for interpreting effect size.

## Discussion and Conclusion

These findings indicate the differences among pregnant women attending a High Risk Clinic for their medical care compared to pregnant women receiving care at a regular obstetrics clinic. Even though the women were matched on reproductive outcomes there were still substantial maternal characteristics, medical problems, and behaviors between the two groups. One expects there to be differences in drug use by virtue of the mission of the High Risk Clinic as doctors in the regular OB clinic referred drug using women and those with HIV to the clinic. Other notable findings were differences in medical problems between the two groups. There were serious medical problem among the women in each group with diabetes and obesity more frequent in the sample from the regular OB clinic, while Hepatitis C, STDs and asthma more problematic among the high risk women. Those women were more likely to report medical problems, other than those listed, which included abnormal Pap screens, urinary tract infections, Streptococcus B, and seizures.

Early reports of deleterious effects of drug use were confounded by effects of medical problems [18,19] and when these were controlled for statistically, pregnancy and birth outcomes were less problematic [20]. That research blunder cautioned the research community to avoid a rush to judgment when evaluating drug using women and the effect of their drug use on their offspring [21]. These are cross-sectional pregnancy data which don't lend themselves to longitudinal analysis of birth outcomes, but the effects of untreated medical problems

on reproductive outcomes is well documented and shows that even some prenatal care visits improve reproductive outcomes significantly [22].

Advocates for prenatal care that is supportive of drug using women argue that it is critical for those women to receive prenatal care so these medical problems can be treated. Evidence shows that drug using women who are afraid of legal repercussions often postpone or avoid receiving prenatal care altogether [23], further impacting the health of the pregnancy. Women who have HIV are at risk for transmitting the disease to their offspring unless they are medically managed with HAART therapy that has been shown to reduce the rate of transmission significantly [24]. One of the advantages of a high Risk Clinic is that substance use is a condition of inclusion. This reduces the likelihood of the pregnant woman minimizing her use. In fact, Garg and colleagues [25] reported that in a prospective cohort of pregnant women, only the women who were maintained on an opiate agonist, and thus identified as a drug user, had 100% agreement between their self-report and the toxicology reports of their drug screens.

Prenatal care is critical so the opioid using woman can be evaluated if an opioid agonist would be a helpful adjunct to treatment. In this sample, women who reported that they had not used opioids during the past six months were maintained on opiate agonists. It may be that these women initiated agonist therapy prior to six months ago and they had not used opiates because of the treatment. This study did not examine the date of onset of agonist therapy with cessation of opioid abuse. Future research that studies this would be of interest. Medical care of opioid addicted women often includes Methadone or Suboxone management because it reduces cravings, and thus negates the necessity of using street drugs which are often adulterated with impure and toxic substances. An agonist also protects the women from engaging in activities that are common to a drug-using lifestyle which can include trading sex for drugs, using dirty needles, and encountering dangerous situations. Medical management with a long-acting agonist also maintains the fetus in a steady state compared to a shorter acting opioid that provokes withdrawal several times each day. Neonates are medically withdrawn from the methadone gradually to avoid discomfort to the newborn.

These data indicate that a large proportion of the women who reported opioid use had abused prescriptions. Prescription abuse has increased exponentially over the years, and a more recent study of this population is warranted. Nonetheless, the women who used prescription drugs were less likely to have been diagnosed with Hepatitis C than women who abused heroin, but were similar in other respects. It is not the case that women who abused prescriptions were more like the non-opioid pregnant women. They were more similar to heroin abusing women than to non-opioid using women except in this regard, but as Hepatitis C is very detrimental to the pregnancy, identifying women who are more at risk is important.

These findings are limited by the sparse data that was generated from the regular OB clinic charts. The authors were not allowed

to extract data from the physical charts but were required to request a clerk to extract data from a small number of variables which had been uploaded onto the warehouse data repository. The authors were limited by the knowledge of the data entry clerks in the warehouse as well as by the nurses who recorded data during the intake interviews. The first author of this study was able to examine the entire charts from the High Risk Clinic in detail and thus was able to include data that was documented

from the intake assessment as well as later clinic visits. These limitations notwithstanding, this study reports on significant differences in two groups of pregnant women attending prenatal care. The data show that while some of the pregnant women at the general OB clinic had serious medical complications, the women who attended the High Risk Clinic experienced much greater reproductive risk factors. These data clearly indicate the importance of specialized clinics for these women because the

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