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Use and Misuse of Opioid Pain Medications by Pregnant and Non-pregnant Women

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Abstract

Purpose—To disseminate data from a national sample of pregnant and non-pregnant women, tracking the rate and predictors of opioid use and misuse.

Design/Methods—In 2015, the National Survey on Drug Use and Health expanded the assessment of opioid pain reliever use and misuse. Here, a secondary analysis of two years of NSDUH data assesses the use and misuse of opioids in pregnant and non-pregnant women ranging in age from 18 to 44 years (n=46,229).

Results—Opioid medication use was reported by 31.89% of pregnant women and 38.87% of non-pregnant women. Race and pregnancy status were associated with risk, with pregnancy being protective and White women having significantly higher risk.

Conclusion—The high rates of use and misuse of opioids in pregnant women underscores a critical need for screening for opioid use and misuse, particularly among White women. Pregnancy provides a unique window of opportunity to educate, screen, and provide treatment.

Clinical implications—Pain management nurses are in a unique position to facilitate routine and universal screening for opioid use and misuse in women of child bearing years.

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Keywords

pregnancy; opioids; use; misuse; non-pregnant

The use and misuse of opioid pain medications is a public health problem that has extended to pregnant women (Substance Abuse and Mental Health Services Administration, 2018). Data from the National Survey on Drug Use and Health (NSDUH: 2005–2014), suggested that 5.1% of pregnant women reported past-year misuse of opioid medication (Kozhimannil, Graves, Levy, & Patrick, 2017). A study of 1.1 million women with completed pregnancies between 2000 to 2007 found that any time during their pregnancy 1 in 5 Medicaid-enrolled pregnant women filled one or more opioid prescriptions (Desai, Hernandex-Diaz, Bateman, & Huybrechts, 2014). A cross sectional analysis of pregnancy-related hospital discharges from 1998 to 2009 reported a prevalence of 2.5 cases per 1,000 discharges associated with maternal opioid use (Whiteman, Salemi, Mogos, Cain, Aliyu, & Salihu, 2014). However, no published reports comparing use and misuse rates of pregnant and non-pregnant women were located. In 2015, the NSDUH expanded the assessment of opioid pain medications to include questions assessing both use and misuse (Center for Behavioral Health Statistics and Quality, 2016). Using the two years of available data, the purpose of this secondary analysis is to assess both the use and misuse of opioid pain medication by pregnant and non-pregnant women.

Methods

National Survey on Drug Use (NSDUH)

The cross-sectional 2015–2016 NSDUH data was used for these analyses (Center for Behavioral Health Statistics and Quality, 2017). The Substance Abuse and Mental Health Services Administration conducts this population-based, in-person survey annually on tobacco, alcohol, and drug use, mental health and other health-related issues in the United States, and is publicly available. Households are randomly selected from all 50 states and the District of Columbia. Participants complete an hour-long, in-home interview with a trained study interviewer. The current secondary analyses of the 2015–2016 survey results was limited to women of childbearing age: 18 to 44 years ($n = 46,229$). The Institutional Review Board granted a waiver from review for this work.

Variables

Demographics and health.—The variables in this secondary analysis included race/ethnicity, categorized age group, education, marital status, and pregnancy status. Respondents were also asked if they were pregnant at the time of the survey, and, if pregnant, to indicate their current trimester. Race/ethnicity was categorized as White, African American/Black, Hispanic/Latino, and Other. The Other race category included Native American/Alaskan Native, Hawaiian Island or other Pacific Islander, Asian, and more than one race. These categories were combined, due to small sample sizes.

Opioid use/misuse.—To assess opioid medication use, respondents were asked if they had ever taken any of the thirty-eight opioid medications. Among checked medications, they

were also asked if they had taken the pain medication within the last 12 months, which was used as the index of past 12-month use.

Opioid misuse was defined as use of an opioid medication without a prescription, or using a prescribed opioid medication in greater amounts, more often, or for longer than directed. The respondents who said yes to the query about misuse were also asked whether the misuse occurred in the last 30 days, thus providing a basis for determining past 30-day misuse.

Statistical Analysis

Numbers are presented as unweighted, while percentages are weighted population estimates. Chi-square tests and logistic regression in STATA MP15 (StataCorp, 2017) were used and adjusted for the survey sampling design with Taylor series approximations (linearized; Levy & Lemeshow, 2013). Logistic regressions included interaction terms when appropriate and these were removed from the equation if not significant. Because of the relatively small sample size within the pregnant group, extensive searching for covariates was not performed.

Data/Results

Sample Characteristics

The current analysis of 2015–2016 data included 46,229 women (18 to 44 years), of whom 3.91% indicated they were pregnant ($n=1,523$; 95% CI: 3.62 – 4.22). The sample's demographics appear in Table 1. The percentages of race/ethnicity groups in the non-pregnant and pregnant women were not significantly different. Pregnant women were somewhat younger than non-pregnant women. There was a significant but small difference in education, in which pregnant women were more likely to be college graduates, although this effect was not large. Pregnant women were also much more likely to be married and less likely to be divorced/separated or never married. Among the pregnant women, the percentages in each trimester were similar: 31.59%, 34.29%, and 34.12% were in their 1st, 2nd, or 3rd, respectively. These percentages did not differ from a uniform distribution (Design-based $F(1.64, 81.78) = 0.45$, $p > 0.596$).

Opioid Use/Predictors

Among all women, 38.6% (95% CI: 37.92% – 39.28%) reported taking an opioid pain medication in the last year. Women who were pregnant at the time of the survey reported past-year opioid use (31.89%) less frequently than non-pregnant women (38.87%), which represented a large and significant difference (Design-based Wald $F = 18.22$, $df = 1, 50$, $p < 0.0001$).

A logistic regression predicted past-year opioid use from pregnancy status, race/ethnicity grouping, and their interaction. The interaction was not significant (Design-based Wald $F = 0.68$, $df = 3, 50$, $p > 0.569$), suggesting that the effects of pregnancy were not significantly different among the race/ethnicity groups. When the model was reduced by omitting the interaction, both pregnancy status (Design-based Wald $F = 19.74$, $df = 1, 50$, $p < 0.020$) and race/ethnicity group (Design-based Wald $F = 37.76$, $df = 3, 50$, $p < 0.001$) were significantly

associated with past-year use. Table 2 shows the odds ratios and confidence intervals for the reduced model. Those who were pregnant, and those who belonged to the Other and Latino race/ethnicity groups were significantly less likely to have used opioid pain relievers in the past year than Whites. Based on the marginal probabilities from the logistic regression, Whites (41.54%; 95% CI: 40.42% – 42.66%) and Blacks (41.40%; 95% CI: 39.51% – 43.29%) were the most likely to use opioids. The Other (28.86%; 95% CI: 26.43% – 31.28%) and Latino (33.53%; 95% CI: 32.03% – 35.02%) had the lowest use rates.

Opioid Misuse/Predictors

Although the opioid-use variable accounted for use during the past year, the misuse variable covered only the past 30 days. Thus, for those women who were pregnant at the time of interview, any misuse was presumably during the pregnancy. Overall, 1.60% (95% CI: 1.45% – 1.76%) of the sample indicated they had misused an opioid pain medication. The difference between misuse in the non-pregnant and pregnant women was not significant (Design-based $F = 1.48$, $df = 1, 50$, $p < 0.228$); non-pregnant women reported 1.62% misuse, while pregnant women reported 0.99% misuse.

Misuse of opioid medication in the past 30-days was predicted by a logistic regression that included pregnancy status, race/ethnicity and their interaction. Not all of the interacting components were testable, because the instances of misuse in the Black pregnant group was too small ($n = 1$). Nevertheless, none of the other interaction contrasts approached significance (all p 's > 0.37); consequently, the interaction term was dropped from the model. Table 2 shows the odds ratios predicting misuse from pregnancy status and race/ethnicity.

Because the pregnant group differed in age and education from the non-pregnant group, those variables were added to the model. The pattern of the race/ethnicity groups was somewhat different for misuse compared to the pattern for use. Whites showed the highest misuse of opioid pain medications; however, the Black group showed significantly less misuse compared to the White group (AOR = 0.40, 95% CI: 0.25 – 0.62), as did the Latino (AOR = 0.45, 95% CI: 0.31 – 0.63) and Other (AOR = 0.37, 95% CI: 0.24 – 0.58) race/ethnicity groups.

Discussion

This secondary analysis of a national sample of women of childbearing age assessed the rates of opioid pain medication use and misuse, among pregnant and non-pregnant women. While pregnant women are less likely than non-pregnant women to use opioid pain medication, almost one third (31.89%) of pregnant women reported opioid use. Although misuse rates among all women seem small, with approximately six million annual pregnancies (Curtin, Abdma, & Host, 2015), a misuse rate of 0.99% translates into approximately 59,400 affected pregnant women.

Our findings also showed that race/ethnicity was identified as a significant risk factor of use and misuse. While a substantial body of research typically documents disproportionate health disparities among ethnic-minorities (Giger, Davidhizar, Purnell, Harden, Phillips, & Strickland, 2007), present findings suggest that White women have the highest risk for use

and misuse of opioid pain medication. This was also found in a study showing that clients admitted into treatment for prescription opioid misuse were predominantly White, with a 50/50 male/female ratio compared to 2-to-1 ratio for all other substances (St. Marie, Sahker, & Arndt, 2015).

A high prevalence of pelvic, low back, and headache pain in pregnancy is one factor that may significantly contribute to this high rate of opioid use (Mogren & Pohjanen, 2005). Preventing opioid misuse while providing appropriate treatment of pain requires thoughtful deliberation on screening and treatment. Short term use of opioids for acute pain is not contraindicated in pregnancy, however, prompting healthcare providers to screen patients for opioid use and misuse and to utilize other strategies to manage pain in pregnancy is essential (American College of Obstetricians and Gynecologists [ACOG], 2017). A recent systematic review of noninvasive, nonpharmacological treatment for chronic pain reported small to moderate short-to intermediate-term effects, suggesting a promising direction for clinical practice that has potential to reduce opioid use, and possibly, subsequent misuse (Skelly, Chou, Dettori et al., 2018). This study informs pain management nurses of the need for utilizing screening tools and providing appropriate services for high risk women.

Study limitations include the relatively small number of pregnant women in this sample and reliance on self-report of use/misuse. Drug usage is often underreported due to shame and social stigma (Substance Abuse and Mental Health Services Administration, 2018). Thus, the rates reported in this survey may underestimate use/misuse. Additionally, in differentiating if the woman used/misused while pregnant, the time periods for past-year and past 30-day use may not line up exactly with the first trimester question.

Conclusions

This study provides information on the high rates of use and misuse of opioids in pregnant women, particularly among White women. These findings underscore a critical need for universal and consistent screening of women in child-bearing years, and appropriate treatment when pain arises.

Significance for Pain Management Nursing

Pain management nurses are responsible for attending to the pain management needs of all patients across the life-span, throughout the continuum of care, including during pregnancy (American Nurses Association & American Society for Pain Management Nursing, 2016; Czarnecki & Turner, 2014). This is the first report of the use and misuse rates in a national sample of pregnant and non-pregnant women. Two noteworthy clinical implications emerge, the relative reduced risk of opioid use among pregnant women, and the significantly higher risk among White women. These findings call out the need for routine and universal screening for opioid use and misuse. In collaboration with providers who are caring for pregnant women, pain management nurses are well positioned to facilitate screening for opioid use and misuse, when caring for women of child bearing years.

Screening in clinical practice.

While pregnancy may be somewhat protective of opioid misuse, there continues to be a need for consistent screening of opioid use and misuse. In 2017, the American College of Obstetricians and Gynecologists recommended universal screening for substance use, including opioids, as part of comprehensive care, using a validated screening tool (ACOG, 2017). While there are no tools specifically validated in obstetrics population, recommended screening tools include the 4Ps, NIDA Quick Screen, and CRAFFT (ACOG, 2017; Chasnoff, Neuman, Thornton, & Callaghan, 2001; Coleman-Cowger, Oga, Peters, Trocin, Koszowski, & Mark, 2018).

Strategies to improve screening for opioid use and misuse have been endorsed at the federal level and is considered the first step in detecting use and misuse. The FDA has been committed to expanding education efforts for interdisciplinary healthcare providers on screening for risk for opioid misuse while managing pain. The FDA Education Blueprint for Healthcare Providers (2018) recommends the need for screening tools to evaluate for known risk factors for opioid use disorder or misuse of opioids. Pain management nurses are well versed at screening while providing safe and effective pain management, and this can be expanded to screening pregnant women for risk of opioid use and misuse.

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Key Practice Points

There are high rates of use and misuse of opioids among pregnant women.

White women showed the highest misuse of opioid pain medications compared to other race/ethnicity groups.

Recommendations are to provide consistent universal screening of women of child bearing years.

Table 1

Demographic Characteristics of Non-pregnant and Pregnant Survey Participants

Race/Ethnicity^a	Non-pregnant	Pregnant
White	55.92% (17,333)	56.52% (776)
Black	13.98% (4,364)	14.4% (227)
Other	10.05% (3,366)	8.99% (168)
Latino	20.06% (6,104)	20.09% (300)
Age^b		
18–25 Years Old	30.07% (14,101)	33.73% (735)
26–34 Years Old	33.31% (8,995)	51.74% (597)
35–44 Years Old	36.62% (8,071)	14.53% (139)
Education^c		
Less high school	11.05% (3,640)	12.32% (219)
High school	20.79% (7,390)	21.0% (406)
Some collage	36.75% (611,946)	31.24% (452)
College graduate	31.42% (8,191)	35.45% (394)
Marital^d		
Married	42.2% (5,514)	59.6% (398)
Widowed	1.1% (207)	1.36% (12)
Divorced/Separated	10.63% (1,431)	5.28% (37)
Never Married	46.05% (8,848)	33.75% (317)

^aDesign-based F(2.78, 139.09) = 0.33, p = 0.787^bDesign-based F(1.70, 84.94) = 71.78, p < 0.001^cDesign-based F(2.56, 128.15) = 4.11 p = 0.012^dDesign-based F(2.36, 117.82) = 16.21, p < 0.001

Table 2

Design-based Logistic Regression Predicting Opioid Pain Medication Use and Misuse

Variables	Past-year Use		30-day Misuse	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Pregnant				
No	1.00		1.00	
Yes	0.73 *	(0.63 – 0.84)	0.60	(0.26 – 1.39)
Race/Ethnicity				
White	1.00		1.00	
Black	0.99	(0.91 – 1.09)	0.43 *	(0.28 – 0.66)
Other	0.57 *	(0.5 – 0.65)	0.37 *	(0.23 – 0.58)
Latino	0.71 *	(0.65 – 0.78)	0.53 *	(0.39 – 0.74)

* $p < 0.01$, df for t-statistics is 47. All interactions were nonsignificant and removed.