

Brief article

Unintended pregnancy in opioid-abusing women

Sarah H. Heil, (Ph.D.)^{a,*}, Hendree E. Jones, (Ph.D.)^b, Amelia Arria, (Ph.D.)^c,
Karol Kaltenbach, (Ph.D.)^d, Mara Coyle, (M.D.)^e, Gabriele Fischer, (M.D.)^f,
Susan Stine, (M.D., Ph.D.)^g, Peter Selby, (M.D.)^h, Peter R. Martin, (M.D.)ⁱ

^aDepartments of Psychiatry and Psychology, University of Vermont, Burlington, VT 05401, USA

^bDepartments of Psychiatry and Behavioral Sciences and Obstetrics and Gynecology, Johns Hopkins University School of Medicine, Baltimore, MD 21224, USA

^cCenter for Young Adult Health and Development, University of Maryland, College Park, MD 20742, USA

^dDepartments of Pediatrics, Psychiatry and Human Behavior, Thomas Jefferson University, Philadelphia, PA 19107, USA

^eDepartment of Pediatrics, The Warren Alpert Medical School of Brown University, Providence, RI 02912, USA

^fDepartment of Psychiatry and Psychotherapy, Medical University of Vienna, Vienna, Austria

^gDepartment of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI 48207, USA

^hAddictions Program, Centre for Addiction and Mental Health, Toronto, Ontario, Canada M5S 2S1

ⁱDepartments of Psychiatry and Pharmacology and Addiction Center, Vanderbilt University School of Medicine, Nashville, TN 37212, USA

Received 1 July 2010; accepted 25 August 2010

Abstract

The aim of this study was to estimate the prevalence of unintended pregnancy and its three subtypes (mistimed, unwanted, and ambivalent) among opioid-abusing women. In the general population, 31%–47% of pregnancies are unintended; data on unintended pregnancy in opioid- and other drug-abusing women are lacking. Pregnant opioid-abusing women ($N = 946$) screened for possible enrollment in a multisite randomized controlled trial comparing opioid maintenance medications completed a standardized interview assessing sociodemographic characteristics, current and past drug use, and pregnancy intention. Almost 9 of every 10 pregnancies were unintended (86%), with comparable percentages mistimed (34%), unwanted (27%), and ambivalent (26%). Irrespective of pregnancy intention, more than 90% of the total sample had a history of drug abuse treatment, averaging more than three treatment episodes. Interventions are sorely needed to address the extremely high rate of unintended pregnancy among opioid-abusing women. Drug treatment programs are likely to be an important setting for such interventions. © 2011 Elsevier Inc. All rights reserved.

Keywords: Pregnancy; Intention; Family planning; Opioid; Drug abuse

1. Introduction

Licit and illicit opioid dependence during pregnancy is often complicated by a multitude of other factors, including low socioeconomic status, poor nutrition, lack of prenatal care, family instability, interpersonal violence, homelessness, psychological problems, and other drug use (Center for Substance Abuse Treatment, 1993). In the perinatal period,

these intertwined factors can contribute to a number of adverse maternal and infant outcomes including, but not limited to, premature delivery, low birth weight, and neonatal abstinence syndrome (see Kaltenbach, Berghella, & Finnegan, 1998, for a review). In the longer term, bearing a child in such disadvantaged circumstances has been shown to significantly diminish the future well-being of both the mother and the child (Graham, 2007, 2009; Mishel, Berstein, & Shierholz, 2009).

Further compounding these difficult circumstances, opioid-dependent women become pregnant more often than women in the general population. In a seminal study of the reproductive health of opioid-dependent women, 54%

* Corresponding author. Rm. 1415 UHC, 1 So. Prospect St., Burlington, VT 05401, USA. Tel.: +1 802 656 8712; fax: +1 802 656 5793.

E-mail address: sarah.heil@uvm.edu (S.H. Heil).

reported having four or more pregnancies in their lifetime compared with 14% of a nationally representative sample of U.S. women (Armstrong, Kennedy, Kline, & Tunstall, 1999). These authors also observed that almost five times as many opioid-dependent women reported ever having an abortion compared with women in the national sample (57% vs. 12%), suggesting that many pregnancies among opioid-dependent women were not intended.

To our knowledge, there is only one small study estimating unintended pregnancy among opioid-dependent women. The results of this study indicated that 67% (24/36) of pregnant women enrolled in a New York City methadone maintenance program reported that they did not plan the pregnancy (Selwyn et al., 1989). As a first step toward developing interventions to reduce unintended pregnancy among opioid-dependent women, this study sought to estimate the prevalence of unintended pregnancy and its three subtypes (mistimed, unwanted, and ambivalent) in a much larger sample of pregnant women reporting opioid abuse.

2. Methods

2.1. Participants

Data were obtained from 946 opioid-abusing pregnant women screened for potential enrollment in the MOTHER (Maternal Opioid Treatment: Human Experimental Research) trial. This multisite trial, performed at eight diverse U.S. and international clinical sites and settings, was designed to compare the safety and efficacy of methadone and buprenorphine for the treatment of opioid dependence during pregnancy (Jones et al., 2008).

2.2. Screening assessment

Participants who provided informed consent were screened for eligibility either at the time of treatment entry or at the time they considered a change from their established drug treatment program. Interviews were conducted with all potential participants to determine eligibility for the study; at some sites, some information was collected by chart review prior to the interview. Demographic information collected included age, education level, race, and marital status. Drug use and treatment variables assessed included frequency of current opioid and cocaine use and the number and type of prior treatment episodes.

Pregnancy intention of the current pregnancy was assessed by the question “When did you intend to become pregnant?” Response options were “sooner,” “now,” “later,” “never,” and “don’t know/unsure.” Women who responded that they intended to become pregnant “sooner” or “now” were classified as having intended pregnancies. Women who responded “later” were classified as having mistimed pregnancies. Women who responded “never”

were classified as having unwanted pregnancies. Women who responded “don’t know/unsure” were classified as having ambivalent pregnancies (Mohllajee, Curtis, Morrow, & Marchbanks, 2007).

2.3. Data analyses

Two types of analyses were performed to examine between-group differences. First, analyses examined the demographic differences between women with intended pregnancies and women with unintended pregnancies. Statistically significant differences in continuous and dichotomous variables were evaluated using *t* tests and *z* tests, respectively. Second, differences in drug use and other factors between groups were evaluated using logistic regression models in which each variable of interest was entered separately into a logit model controlling for age, race, and site location.

3. Results

3.1. Pregnancy intentions

Of 946 opioid-abusing women screened, 129 (14%) reported having intended pregnancies and 817 (86%) reported having unintended pregnancies. As a percentage of all pregnancies, 323 (34%) were mistimed, 252 (27%) were unwanted, and 242 (26%) were ambivalent pregnancies.

3.2. Pregnancy intention and maternal demographic characteristics and drug use

No significant differences were observed on the five maternal demographic characteristics compared between women with intended versus unintended pregnancies (top part of Table 1). Regarding the subtypes of unintended pregnancy, women with mistimed pregnancies were significantly younger compared with women with intended pregnancies, $t(450) = 2.1, p < .05$. Women with unwanted pregnancies were significantly older, $t(379) = 4.8, p < .001$, and less likely to be White, $t(378) = 2.9, p < .01$, compared with women with intended pregnancies. Women with ambivalent pregnancies were significantly older, $t(368) = 3.3, p = .001$, and less likely to be White, $t(366) = 2.7, p < .01$, and employed, $t(354) = 2.8, p < .01$, compared with women with intended pregnancies.

Regarding maternal drug use, women with unintended pregnancies were more likely to have used cocaine in the 30 days prior to screening compared with women with intended pregnancies (adjusted odds ratio = 1.6, $p < .05$). Regarding the subtypes of unintended pregnancy, women with mistimed pregnancies were less likely to have used cocaine in the past 30 days compared with women with intended pregnancies (adjusted odds ratio = 1.8, $p < .05$). Women with ambivalent pregnancies were more likely to report prior

Table 1
Maternal demographic characteristics and drug use by pregnancy intention

Characteristics	Total, (<i>N</i> = 946) ^a	Intended (<i>n</i> = 129, 14%)	Unintended (<i>n</i> = 817, 86%)	Unintended pregnancy subtypes		
				Mistimed (<i>n</i> = 323, 34%)	Unwanted (<i>n</i> = 252, 27%)	Ambivalent (<i>n</i> = 242, 26%)
Demographic characteristics						
Age, <i>M</i> (<i>SD</i>), years	27.9 (5.9)	27.0 (5.4)	28.1 (5.9)	25.8 (5.4) ^b	30.1 (6.1) ^b	29.0 (5.5) ^b
% White	78	82	77	89	69 ^b	70 ^b
Years of education, <i>M</i> (<i>SD</i>)	11.1 (1.8)	11.2 (2.1)	11.1 (1.8)	11.1 (1.7)	11.2 (1.9)	11.1 (1.9)
% married	11	13	11	9	11	13
% employed	11	15	11	13	12	6 ^b
Drug use ^c						
% with prior drug treatment	91	91	91	90	90	95
% with prior medication-assisted treatment	88	87	88	84	89	92 ^b
Number of times treated for drug abuse in lifetime, <i>M</i> (<i>SD</i>)	3.2 (3.6)	3.2 (4.0)	3.2 (3.5)	2.9 (2.9)	3.4 (4.2)	3.3 (3.2)
Years of age at first medication-assisted treatment, <i>M</i> (<i>SD</i>)	24.8 (5.5)	23.8 (5.1)	25 (5.6)	22.9 (4.9)	26.3 (5.8)	26.2 (5.4)
% with daily illicit/nonmedical opioid use in the 30 days prior to screening	83	72	85	74	91	93
% with cocaine use in the past 30 days	40	40	40 ^b	28 ^b	48	49

^a *ns* vary by characteristic due to missing data and range from 726 to 945.

^b Significantly different ($p < .05$) from intended pregnancy group.

^c Analyses controlled for age, race, and site.

medication-assisted treatment compared with women with intended pregnancies (adjusted odds ratio = 0.5, $p < .05$).

4. Discussion

Unintended pregnancy was highly prevalent in this sample; nearly 9 of every 10 women screened reported that the current pregnancy was unintended. This rate is two to three times the rate observed in the general population (Chandra, Martinez, Mosher, Abma, & Jones, 2005; Mohllajee et al., 2007; Williams et al., 2006). In addition, the occurrence of unintended pregnancy in the current sample was nearly 20% higher than previous estimates in pregnant women with opioid problems (Selwyn et al., 1989).

To our knowledge, this is the first report of the rates of the three subtypes of unintended pregnancy in opioid-abusing pregnant women. The percentage of women reporting mistimed, unwanted, or ambivalent pregnancies in the present sample were fairly comparable, with each representing about one third of the total sample. The percentage of women reporting an unwanted pregnancy was nearly three times higher in this study compared with the general population; and the percentage of women reporting ambivalence, more than four times higher (Mohllajee et al., 2007). These figures dramatically underscore the need to develop interventions to bring contraceptive use in line with conception desires among opioid-abusing women.

Although there were few differences between women with intended versus unintended pregnancies, more differences emerged when women with unintended pregnancies were disaggregated into the three subtypes of unintended

pregnancy and compared with women with intended pregnancies. Consistent with the literature on pregnancy intention in the general population, women with mistimed pregnancies were younger (D'Angelo, Gilbert, Rochat, Santelli, & Herold, 2004; Mohllajee et al., 2007). A lower percentage of these women also reported recent cocaine use compared with women with intended pregnancies. In studies of the general population, women with mistimed pregnancies report more smoking but less drinking compared with women with intended pregnancies (D'Angelo et al., 2004; Mohllajee et al., 2007), suggesting some variability in drug use among women with mistimed pregnancies.

Consistent with the literature in the general population, women with unwanted and ambivalent pregnancies were older and less likely to be White compared with women with intended pregnancies (D'Angelo et al., 2004; Mohllajee et al., 2007). Women with ambivalent pregnancies were also more likely to be unemployed, and a higher percentage reported prior medication-assisted treatment. Overall, the greatest number of differences was observed between women with ambivalent versus intended pregnancies. This is in contrast to the general population literature, where women with ambivalent pregnancies tend to be most similar to women with intended pregnancies in terms of demographic characteristics and maternal and infant outcomes (Mohllajee et al., 2007). Additional studies will be needed to replicate this pattern of results and to determine the implications of such differences.

Although there were no differences as a function of pregnancy intention on this variable, it is notable that more than 90% of the total sample had a history of prior drug treatment, averaging more than three episodes. These data

suggest that drug abuse treatment programs may be an important setting for interventions to reduce the very high rate of unintended pregnancy in this population. In the late 1980s, the Centers for Disease Control (CDC) funded several demonstration projects designed to improve access to reproductive health services for women at high risk of unintended pregnancy and HIV infection, including women with substance use disorders (see [Armstrong et al., 1999](#)). One strategy for doing so involved integrating free family planning services into drug treatment programs. The limited results reported from these projects suggest that women who received family planning services, including inexpensive referral services, in their drug treatment program were more likely to be using contraception at follow-up than were women who did not ([CDC, 1995](#)). These findings suggest that this is a promising model that should be further developed and rigorously tested as part of efforts to reduce unintended pregnancy among drug-abusing women.

This study has notable strengths. The data were systematically collected across eight diverse U.S. and international clinical sites and settings and represent the largest data set to date on the topic of pregnancy intention in pregnant women with substance use disorders. The study also has limitations. The format of the pregnancy intention question differed from the format used in national surveys (e.g., the National Survey on Family Growth and Pregnancy Risk Assessment Monitoring System) and has not been formally validated in women with substance use disorders. In addition, it is possible that women who were screened for potential study participation may not be representative of the larger population of opioid-dependent women. Nevertheless, the results of this study clearly document the extremely high rate of unintended pregnancy among a large sample of opioid-abusing women and underscore the need for a greater scientific attention to this serious problem.

Acknowledgments

Funding for this study was provided by National Institute on Drug Abuse Research Grants R01 DA 015738, 015741,

015764, 015778, 015832, 017513, 018410, and 018417. We thank Laura Garnier for assistance with statistical analyses.

References

- Armstrong, K. A., Kennedy, M. G., Kline, A., & Tunstall, C. (1999). Reproductive health needs: Comparing women at high, drug-related risk of HIV with a national sample. *Journal of the American Medical Women's Association*, 54, 65–70.
- Centers for Disease Control. (1995). What we have learned...1990-1995. Retrieved from <http://www.cdc.gov/std/research/older/wwhl-1990-1995/learn0.htm>.
- Center for Substance Abuse Treatment. (1993). *Improving treatment for drug-exposed infants*. Treatment Improvement Protocol (TIP) Series 5. Rockville, MD.
- Chandra, A., Martinez, G. M., Mosher, W. D., Abma, J. C., & Jones, J. (2005). Fertility, family planning, and reproductive health of U.S. women: Data from the 2002 National Survey of Family Growth. *Vital and Health Statistics*, 1–160.
- D'Angelo, D. V., Gilbert, B. C., Rochat, R. W., Santelli, J. S., & Herold, J. M. (2004). Differences between mistimed and unwanted pregnancies among women who have live births. *Perspectives on Sexual and Reproductive Health*, 36, 192–197.
- Graham, H. (2007). *Unequal lives: Health and socioeconomic inequalities*. Berkshire, England: Open University Press.
- Graham, H. (2009). Women and smoking: Understanding socioeconomic influences. *Drug and Alcohol Dependence*, 104(Suppl 1), S11–S16.
- Jones, H. E., Martin, P. R., Heil, S. H., Kaltenbach, K., Selby, P., Coyle, M. G., et al. (2008). Treatment of opioid dependent pregnant women: Clinical and research issues. *Journal of Substance Abuse Treatment*, 35, 245–259.
- Kaltenbach, K., Berghella, V., & Finnegan, L. (1998). Opioid dependence during pregnancy. Effects and management. *Obstetrics and Gynecology Clinics of North America*, 25, 139–151.
- Mishel, L. I., Bernstein, J., & Shierholz, H. (2009). *The state of working America, 2008/2009*. Ithaca, NY: ILR Press.
- Mohllajee, A. P., Curtis, K. M., Morrow, B., & Marchbanks, P. A. (2007). Pregnancy intention and its relationship to birth and maternal outcomes. *Obstetrics and Gynecology*, 109, 678–686.
- Selwyn, P. A., Carter, R. J., Schoenbaum, E. E., Robertson, J., Klein, R. S., & Rogers, M. F. (1989). Knowledge of HIV antibody status and decisions to continue or terminate pregnancy among intravenous drug users. *Journal of the American Medical Association*, 261, 3567–3571.
- Williams, L., Morrow, B., Shulman, H., Stephens, R., D'Angelo, D., & Fowler, C. I. (2006). PRAMS 2002 surveillance report. Retrieved from <http://www.cdc.gov/PRAMS/2002PRAMSSurvReport/Index.htm>.