

A Review of Unintended Pregnancy in Opioid-Using Women

Implications for Nursing

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Abstract

Background: Opioid use among reproductive-age women has greatly increased, resulting in high rates of opioid-exposed pregnancies, which are associated with negative outcomes, such as neonatal abstinence syndrome. Prevention of unintended pregnancy among opioid users is a critical pathway to reducing opioid-exposed pregnancies; however, little is known about pregnancy intention in this group. This article estimates the prevalence of unintended pregnancy among opioid-using women, thereby supporting efforts to develop interventions to reduce unintended pregnancy.

Methods: A systematic literature search was conducted in PubMed, Web of Science, PsycINFO, and CINAHL, in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses framework. Reference lists of articles were searched. Eligibility criteria included reported unintended pregnancy rates within a population of opioid-using women of reproductive age. The search was completed in July 2018 and updated in October 2019.

Results: We identified 115 citations, screened 64 titles/abstracts, reviewed 31 full-text articles, and included 12 articles for this review. Rates of unintended pregnancy in opioid users were estimated in two ways, across the lifetime and for a current pregnancy, depending on study samples. Rates for both groups were high, with rates among currently pregnant opioid-using women (85%) compared with 45% among the general population.

Conclusions and Implications: Unintended pregnancy rates in opioid-using women were strikingly high, indicating a critical need for intervention. Routine inclusion of pregnancy planning in opioid treatment care is indicated.

Education regarding contraception and opioid treatment services is essential for nurses in these settings. Family planning and opioid treatment efforts can be optimized by care coordination, with focus on nurse training for screening and patient education.

Keywords: Family Planning Services, Opioid-Related Disorders, Pregnancy, Unplanned

Opioid use among reproductive-age women has greatly increased in the United States in recent years, with a 400% increase in overdoses from prescription opioids from 1999 to 2010 in this group (Ailes et al., 2015; Mack, 2013). Given high rates of contraceptive nonuse among reproductive-age women in general, and opioid users in particular, the prevalence of opioid use disorder among women presenting for labor and delivery quadrupled from 1999 to 2014 (Daniels & Abma, 2018; Patrick et al., 2015; Terplan et al., 2015). Opioid use in pregnancy leads to a numerous adverse maternal and neonatal outcomes including fetal growth restriction, preterm birth, neonatal abstinence syndrome, and death (American College of Obstetricians and Gynecologists [ACOG], 2017). Pregnancy planning and prevention of unintended pregnancy can potentially reduce opioid-exposed pregnancies and their negative sequelae; however, little is known about pregnancy intention among opioid-using women.

Unintended pregnancy, also known as unplanned pregnancy, occurs when a person who is pregnant did not intend for the pregnancy to occur at the current time (Guttmacher Institute, 2019). Nearly half (45%) of pregnancies each year in the general U.S. population are reportedly unintended (Guttmacher Institute, 2019). Unintended pregnancies are associated with an increased risk of inadequate prenatal care, reduced incidence of breastfeeding, and a higher risk for postpartum depression and anxiety (Gipson et al., 2008; Kost & Lindberg, 2015). Other evidence links unintended pregnancy with poor neonatal outcomes, including preterm birth, low birth weight, or even neonatal mortality (Gipson et al., 2008). Unintended pregnancy also has broader consequences. For example, unplanned pregnancy has a negative association with the mothers' future educational attainment and participation in the workforce (Thomas & Monea, 2011).

Reducing unintended pregnancy among women using opioids is an emerging public health goal set out by the Centers for Disease Control and Prevention, American Academy of Pediatrics,

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and ACOG (ACOG, 2017; Centers for Disease Control and Prevention, 2018; Patrick et al., 2017). Unfortunately, until recently, there was little known about unintended pregnancy in this population. Heil et al. (2011) reported prevalence of unintended pregnancy in a sample of opioid-using pregnant women enrolling in a clinical trial of methadone versus buprenorphine, with estimated unintended pregnancy rates of 86%. This estimation has been used as evidence of high rates of unintended pregnancy in subsequent studies (Leinaar et al., 2019; MacAfee et al., 2019; Parlier et al., 2014; Terplan et al., 2015). Before Heil et al. (2011), to our knowledge, there was only one other study that estimated unintended pregnancy in opioid users, which reported an unintended pregnancy rate of 66.7% among opioid-using pregnant women enrolled in a medication maintenance program (Selwyn et al., 1989). Therefore, what we currently know about unintended pregnancy in opioid-using women has relied on only two samples of currently pregnant opioid users seeking medication-assisted treatment taken two decades apart and, at the least, nearly one decade ago. As opioid use has greatly accelerated in more recent years, we must critically re-evaluate the literature regarding the scope of unintended pregnancy in this population to most effectively reduce unintended pregnancy. This review estimates the prevalence of unintended pregnancy among opioid-using women of reproductive age by reviewing available literature, thereby supporting future efforts to develop interventions to reduce unintended pregnancy among opioid users.

METHODS

In July 2018, a systematic literature search was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses literature review checklist through a search of PubMed, Web of Science, PsycINFO, and CINAHL Plus with Full Text using a combination of keywords and database-specific subject headings for the following: unintended pregnancy, unplanned pregnancy, or abortion, AND opioid abuse, opioid use, opioid addiction, or opioid-related disorders. Results were limited to English language and publication dates of 2010 or later, to provide an estimate of unintended pregnancy based on more recent literature (Moher et al., 2009). Reference lists of relevant articles were searched to identify additional articles for inclusion. The first author performed the search and developed inclusion and exclusion criteria. This search was replicated in October 2019 with results limited to articles from 2018 to present, to ensure inclusion of the most up-to-date relevant literature.

Articles were included if the following criteria were met: (a) study population that included opioid-addicted or opioid-using women of reproductive age and (b) unintended pregnancy rates that were reported for the sample of opioid-using women. Articles from outside the United States were included to most fully capture what is known about unintended pregnancy in an opioid-using population. Non-peer-reviewed or review articles were excluded, although original studies from any review articles identified were searched for inclusion.

Studies were reviewed for inclusion by two authors. Any disagreements were discussed until consensus was reached. Included studies were extracted by the first author.

RESULTS

The Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines were followed, and 115 studies were identified (see Figure 1; Moher et al., 2009). After removal of duplicates, 64 studies underwent an initial title and abstract review, after which 33 were excluded for not meeting inclusion criteria. The remaining studies ($n = 31$) were evaluated for eligibility based on full-text review, resulting in exclusion of an additional 19 studies. Of these 19, eight did not report unintended pregnancy rates of the sample, six did not report unintended pregnancy rates for opioid users, two were secondary analyses of the same data set as one of the included studies, one did not include opioid users, one was a policy statement and not a research article, and one was a review article on contraceptive use in drug users that was searched for original articles. The final sample ($n = 12$) was used for this review.

Study Design and Purpose

Seven of the studies were survey based, three were mixed methods, one was a retrospective chart review, and one was a secondary analysis of prospective cohort data. Five of these 12 studies had the expressed purpose of describing and/or estimating prevalence of unintended pregnancy among opioid-using women. The remaining studies' purposes included improving understanding of contraceptive needs among women in opioid treatment programs (Black et al., 2012; Heil et al., 2016; Matusiewicz et al., 2017; Meschke et al., 2018), examining pregnancy decision making and experiences among opioid-using women (Mejak & Kastelic, 2016; Selwyn et al., 1989), and comparing neonatal outcomes after prenatal exposure to methadone or buprenorphine (Welle-Strand et al., 2013). Sample sizes ranged from $n = 15$ to $n = 946$, with a mean sample size of $n = 168$. Eight of the 12 included studies originated in the United States, with the remaining four from Norway, Slovenia, New Zealand, and the United Kingdom, respectively.

Prevalence of Unintended Pregnancy

The included studies reported unintended pregnancy rates ranging from 52.8% to 94%. Unintended pregnancy rates were reported in two different forms, however. Eight of the studies ascertained the number of unintended pregnancies across the lifetime of women recruited from opioid maintenance treatment centers (see Table 1; Black et al., 2012; Collier et al., 2019; Heil et al., 2016; Leinaar et al., 2019; Matusiewicz et al., 2017; Meschke et al., 2018; Oloff et al., 2019; Smith et al., 2019). The remaining four studies established rates of unintendedness of a current pregnancy among pregnant women who either currently used opioids or were in opioid maintenance treatment programs (see Table 2; Heil et al., 2011; Lundsberg et al., 2018; Mejak & Kastelic, 2016; Welle-Strand et al., 2013). As such, the results were grouped according to either lifetime rate of

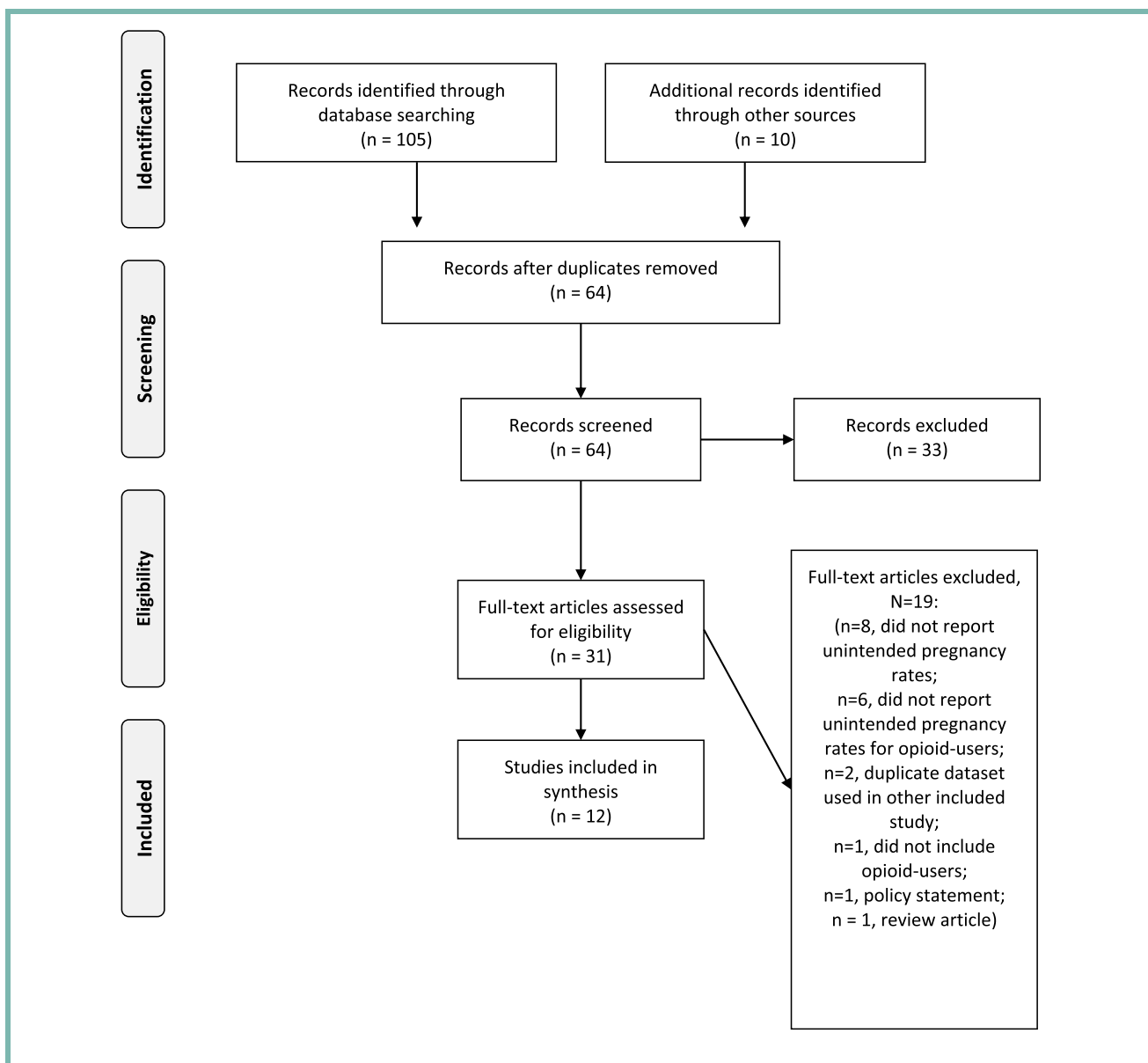


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) diagram (Moher et al., 2009).

unintended pregnancy or unintended pregnancy rates of current pregnancy among opioid users.

Lifetime Unintended Pregnancy Rate The weighted-mean lifetime unintended pregnancy rate was estimated at 79.2% (range: 52.8%–94%) among the combined sample of $N = 860$ women currently in opioid maintenance therapy or with opioid use disorder (see Table 3). The proportion of the study sample to the total combined sample was used to weight the relative contribution of each study's reported unintended pregnancy rate to our estimation, as discussed by the Cochrane Handbook for Systematic Reviews of Interventions (The Cochrane Collection, 2008). Using the weighted mean rates allowed our estimated rates of unintended pregnancy to most accurately include each study's reported rates while reflecting the size of the sample from which the rate was calculated.

Current Unintended Pregnancy Rate Among currently pregnant opioid users, the weighted-mean unintended pregnancy rate was estimated at 84.9% (range: 78.4%–86%) among the combined sample of $N = 1,124$ women currently pregnant and either actively using opioids or in opioid maintenance therapy (see Table 4). As above, the proportion of the study sample to the total combined sample was used to weight the relative contribution of each study's reported unintended pregnancy rate to our group estimation (The Cochrane Collection, 2008).

DISCUSSION

This review of the literature updates the estimation of unintended pregnancy prevalence among opioid-using women based on recent data and confirms previously reported

TABLE 1 Lifetime Unintended Pregnancy Rates Among Opioid-Using Women

Author/Year	Country	Purpose	Research Design	Sample Size	Unintended Pregnancy Rate
Black et al. (2012)	New Zealand	To identify the reproductive health needs of women attending public opioid treatment program clinics	Survey; cross-sectional	<i>n</i> = 183 women in an opioid treatment program	84.2%
Collier et al. (2019)	United States	To determine the influence of medication-assisted treatment (MAT) on pregnancy planning, interpregnancy interval, and uptake of postpartum contraception	Retrospective chart review	<i>n</i> = 98 women who had received MAT	84.2%
Heil et al. (2016)	United States	To test an intervention aimed at promoting more effective contraceptive use among opioid-maintained women at risk for unintended pregnancy	Survey; randomized controlled trial	<i>n</i> = 31, in opioid treatment program	87%
Leinaar et al. (2019)	United States	To describe access to reproductive healthcare, pregnancy intentions, and contraceptive use among women receiving opioid agonist treatment (OAT)	Survey; cross-sectional	<i>n</i> = 89 women in OAT	52.8%
Matusiewicz et al. (2017)	United States	To examine knowledge and concerns of LARC among women with opioid use disorder and at risk for UIP	Mixed methods	<i>n</i> = 83, with opioid use disorder	94%
Meschke et al. (2018)	United States	To better understand the barriers and facilitators of effective contraceptive use for women who received MAT for OUD	Survey; cross-sectional	<i>n</i> = 287 women in MAT	77%
Olioff et al. (2019)	United Kingdom	To assess pregnancy history, contraceptive use, and access to contraceptive services of women attending clinic for opioid replacement therapy (ORT)	Survey; cross-sectional	<i>n</i> = 39 women in ORT	79.5%
Smith et al. (2019)	United States	To assess the reproductive history and pregnancy intentions of women of childbearing age enrolled in MAT for OUD	Mixed methods	<i>n</i> = 50 women in MAT	84%
				<i>N</i> = 860	Weighted mean = 79.2%

LARC = long-acting reversible contraception; OUD = opioid use disorder; UIP = unintended pregnancy.

strikingly high rates of unintended pregnancy in this population. This review also updates the way in which unintended pregnancy prevalence is considered, teasing apart unintended pregnancy both across the lifetime and in relation to a current pregnancy, to more accurately reflect the varying measures used within current research. Compared with national rates of unintended pregnancy among the currently pregnant of 45%, estimations of unintended pregnancy among currently pregnant opioid users of 84% and lifetime rates of 79% indicate a potentially urgent need for effective pregnancy planning

interventions targeting opioid-using populations (Guttmacher Institute, 2019).

The high rates of unintended pregnancy estimated here may be attributed to use of less effective methods of contraception among opioid-using women, low perceived risk of pregnancy while using opioids, barriers to accessing desired family planning to prevent or space pregnancies, or a lack of inclusion of pregnancy planning into drug treatment programs (Leinaar et al., 2019; MacAfee et al., 2019; Meschke et al., 2018; Smith et al., 2019; Terplan et al., 2015). Barriers faced by

TABLE 2 Unintended Pregnancy Rates of Current Pregnancy Among Opioid-Using Women

Author/Year	Country	Purpose	Research Design	Sample Size	Unintended Pregnancy Rate
Heil et al. (2011)	United States	To estimate the prevalence of unintended pregnancy among opioid-abusing women	Survey; screening for maternal opioid treatment trial	<i>n</i> = 946 opioid-using pregnant women	86%
Lundsberg et al. (2018)	United States	To evaluate the association between preconception tobacco, alcohol, marijuana, opioid, and cocaine use with unplanned or poorly timed pregnancy among a cohort of pregnant women	Secondary analysis of a prospective cohort study	<i>n</i> = 24 opioid-using pregnant women	79.2%
Mejak & Kastelic (2016)	Slovenia	To explore and better understand the experiences of women using illicit drugs during pregnancy, childbirth, and motherhood	Mixed methods	<i>n</i> = 15 opioid-using pregnant women	86%
Welle-Strand et al. (2013)	Norway	To compare neonatal outcomes after prenatal exposure to methadone versus buprenorphine	Survey; clinical cohort study	<i>n</i> = 139 pregnant women in an opioid treatment program	78.4%
				<i>N</i> = 1124	Weighted mean = 84.9%

opioid users when accessing healthcare in general, such as stigma and mistreatment, can lead to underutilization of services, which may also fuel these high rates of unintended pregnancy. For example, evidence suggests women who use drugs avoid seeking healthcare because of fears of being turned in to law enforcement by health professionals (Biancarelli et al., 2019; Stengel, 2014; Swan et al., 2020). Studies recommended co-located opioid treatment and family planning services as one viable option to combatting unintended pregnancy

among opioid-using women (Collier et al., 2019; Leinaar et al., 2019; MacAfee et al., 2019; Meschke et al., 2018; Oliofoff et al., 2019). Co-location of additional health services with opioid treatment services has been used with prenatal care with positive neonatal and maternal outcomes (Krans et al., 2018; Milligan et al., 2011).

Seven of the 13 articles included in this review were published in the last 2 years, indicating an increased attention to this important topic. As much of the literature is still in a

TABLE 3 Lifetime Prevalence of Unintended Pregnancy Among Opioid-Using Women

Author/Year	Sample Size	Unintended Pregnancy Rate (%)	Weight (% Study Sample/Total Sample)	Weighted Unintended Pregnancy Rate (%)
Black et al. (2012)	<i>n</i> = 183	84.2	0.213	17.9
Collier et al. (2019)	<i>n</i> = 98	84.2	0.114	9.6
Heil et al. (2016)	<i>n</i> = 31	87.0	0.036	3.1
Leinaar et al. (2019)	<i>n</i> = 89	52.8	0.103	5.5
Matusiewicz et al. (2017)	<i>n</i> = 83	94.0	0.097	9.1
Meschke et al. (2018)	<i>n</i> = 287	77.0	0.334	25.7
Oliofoff et al. (2019)	<i>n</i> = 39	75.5	0.045	3.4
Smith et al. (2019)	<i>n</i> = 50	84.0	0.058	4.9
Total	<i>N</i> = 860			79.2

TABLE 4 Prevalence of Current Unintended Pregnancy Among Pregnant Opioid-Using Women

Author/Year	Sample Size	Unintended Pregnancy Rate (%)	Weight (% Study Sample/Total Sample)	Weighted Unintended Pregnancy Rate (%)
Heil et al. (2011)	<i>n</i> = 946	86.0	0.841	72.4
Lundsberg et al. (2018)	<i>n</i> = 24	79.2	0.021	1.7
Mejak & Kastelic (2016)	<i>n</i> = 15	86.0	0.013	1.1
Welle-Strand et al. (2013)	<i>n</i> = 139	78.4	0.124	9.7
Total	<i>N</i> = 1124			84.9

descriptive phase, intervention-based research on unintended pregnancy among opioid-using women is still lacking. Heil et al. (2016) are the only identified researchers currently testing targeted interventions for reducing unintended pregnancy among opioid-maintained women at risk for unintended pregnancy. Future research should further characterize risk factors for future unintended pregnancy in opioid users at risk for pregnancy compared with those currently pregnant to provide specialized recommendations for intervention.

Implications for Nurses

Nurses are frontline care providers in the clinical setting and thus are uniquely positioned to screen, educate, coordinate, and advocate for patients' pregnancy planning and/or opioid treatment needs (see Figure 2). Routine screening by nurses for family planning needs in the opioid treatment setting and opioid treatment needs in the family planning setting can ensure more adequate identification and prioritization of patients in need of services. As patient educators, nurses can then provide necessary information and treatment options that are patient centered, nonjudgmental, and noncoercive, which are key features to both family planning and opioid treatment service provision. As coordinators of care, nurses can optimize pregnancy planning and opioid treatment maintenance through prompt and supported referrals to available

services, particularly options that serve a variety of patient needs, such as those offering sliding fee scales and accepting Medicaid (Orgera & Tolbert, 2019). As patient advocates, nurses can also support and protect patients to safely disclose opioid use in the setting of pregnancy, as evidence suggests fear of judgment and criminal prosecution causes some to hide drug use from health providers (Goode, 2000; Stone, 2015). To build nurse capacity to meet these recommendations, on-the-job education in addition to increased education for nurses at the undergraduate and graduate levels are essential regarding both family planning and opioid treatment services. Reciprocity among opioid treatment and family planning service providers would be integral to building a referral safety net network and can be facilitated through co-location of services or same-day availability of appointments (Lightburn & Sessions, 2005).

Limitations

This review has several limitations. Pregnancy intention as a concept can be problematic, and measurements of unintended pregnancy are typically thought to be underreported (Santelli et al., 2003). For example, there is doubt as to whether some individuals conceive of pregnancy as something to “plan” versus something “that just happens” (Borrero et al., 2015). There is also evidence that, even if unwanted, individuals may feel

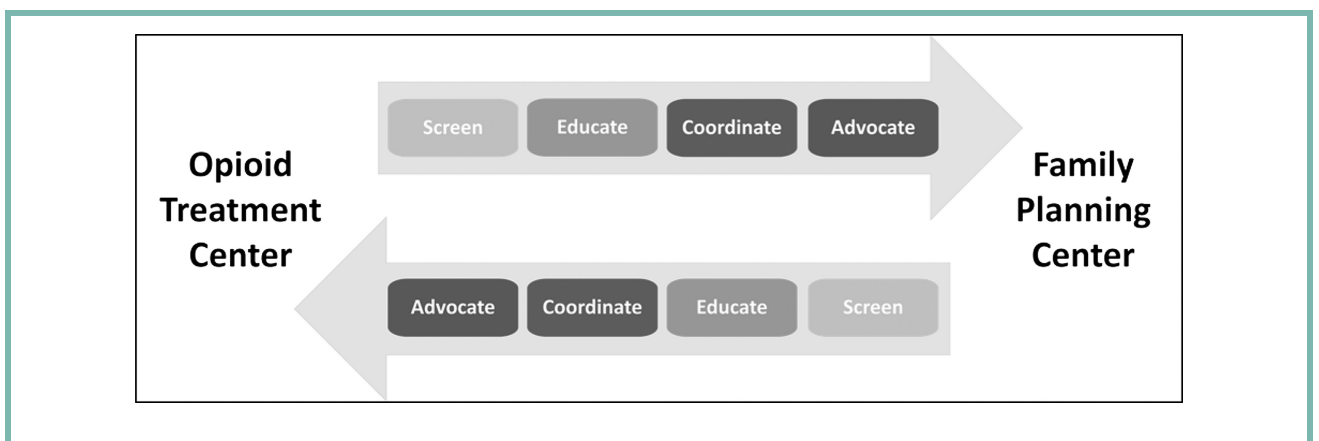


Figure 2. Recommendations for nurses.

social pressure not to identify a pregnancy as unwanted or unplanned (Moreau et al., 2014). Other evidence suggests perceptions of pregnancy intention shift across the duration of a pregnancy to favor intendedness, which could result in lower reported rates of unintended pregnancy among pregnant people who continue the pregnancy to term, as reported in this review (O'Donnell et al., 2018). The hard-to-reach nature of the opioid-using population also limits our ability to generalize these results to opioid-using women who are not in opioid treatment centers (Goode, 2000). Several of the included studies have small sample sizes, which we attempted to reflect using a weighted-average approach to estimating unintended pregnancy rates (The Cochrane Collection, 2008).

Conclusions

High rates of unintended pregnancy among opioid-using women represent an urgent unmet opportunity to provide wraparound services for this population (Oser et al., 2009). Opioid treatment centers can be essential partners in screening for unmet contraceptive needs. Family planning centers may also screen for opioid use and identify unmet treatment needs. Pregnancy offers an important opportunity to reach an opioid-using population with education on opioid treatment and postpartum contraception. Routine inclusion of screening for unmet family planning needs in opioid treatment services and opioid treatment needs in family planning services is recommended. Nurses can play a pivotal role in bridging the gap between opioid treatment and family planning services.

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