Published in final edited form as:

Subst Use Misuse. 2020 ; 55(14): 2403–2408. doi:10.1080/10826084.2020.1823418.

Contraceptive knowledge among females and males receiving medication treatment for opioid use disorder compared to those seeking primary care

Heidi S. Melbostad^{a,b}, Gary J. Badger^a, Catalina N. Rey^{a,c}, Lauren K. MacAfee^d, Anne K. Dougherty^d, Stacey C. Sigmon^{a,b,c}, Sarah H. Heil^{a,b,c,*}

^aVermont Center on Behavior and Health, 1 South Prospect Street, UHC - OH3 MS 482, Burlington, VT, United States, 05401

^bUniversity of Vermont, Department of Psychological Science, 2 Colchester Avenue, John Dewey Hall, Room 248, Burlington, VT, United States, 05405

^cUniversity of Vermont, Department of Psychiatry, 1 South Prospect Street, MS 446AR6, Burlington, VT, United States 05401

^dUniversity of Vermont, Department of Obstetrics, Gynecology, and Reproductive Sciences, 111 Colchester Avenue, Smith 410, Burlington, VT, United States 05401

Abstract

Background: Rates of unintended pregnancy among women receiving medication treatment for opioid use disorder (mOUD) are high, likely due in part to low rates of contraceptive use. Lack of knowledge about contraception may be contributing to inadequate contraceptive use.

Objectives: To compare contraceptive knowledge among women and men receiving mOUD relative to a comparison group seeking primary care.

Methods: We surveyed 332 reproductive-age women and men receiving mOUD or primary care with the recently validated 25-item Contraceptive Knowledge Assessment. We examined overall differences between patient groups and between females and males using two-way analyses of variance; individual item differences were tested using logistic regression.

Results: The mean percent of total correct responses was lower among individuals receiving mOUD ($n=167$) relative to the comparison group ($n=165$), 47.7% vs. 53.8%, respectively ($p<.001$), and higher among females ($n=169$) relative to males ($n=163$), 56.1% vs. 45.2%, respectively ($p<.001$). Individual item analyses revealed patient group and sex differences primarily in the areas of contraceptive efficacy, attributes of contraceptive methods, and fertility awareness.

*Corresponding author's address: 1 South Prospect Street, UHC - OH3 MS 482, Burlington, VT 05401, Telephone: (802) 656-0880, sarah.heil@uvm.edu.

Disclosures of interest

The authors report no conflicts of interest. This work was supported by the National Institute on Drug Abuse under Grants R01DA036670, R01DA047867, and T32DA07242 and the National Institute of General Medical Sciences under Grant P20GM103644.

Conclusion: While there were modest differences between patient groups and sexes, the results suggest a deficit in contraceptive knowledge across all groups. Substance use disorder treatment clinics could be an opportunistic setting in which to provide accurate information about contraception to patients with OUD and other substance use disorders.

Keywords

opioid use disorder; contraception; contraceptive knowledge; unintended pregnancy; reproductive health; family planning; substance use treatment; medication treatment

Introduction

The rate of unintended pregnancy among women receiving medication treatment for opioid use disorder (mOUD) averages nearly 80% (Black, Stephens, Haber, & Lintzeris, 2012; Meschke, McNeely, Brown, & Prather, 2018; Smith, Morse, & Busby, 2018), in striking contrast to women in the general population (45%; Finer & Zolna, 2016). Correct and consistent use of contraception by women and men is a highly effective strategy to prevent unintended pregnancy, although typically less than 50% of women receiving mOUD who are at risk of unintended pregnancy report current contraceptive use, a rate almost half that of the general population (90%; Black et al., 2012; Curtis et al., 2016; Kavanaugh & Jerman, 2018; Poulton, Parlier, Scott, Fagan, & Shelley, 2015).

One approach to decreasing unintended pregnancy among women with OUD and other substance use disorders (SUD) that is receiving increased attention is to locate and integrate reproductive and sexual health services into SUD treatment programs (Klaman, Lorvick, & Jones, 2019; MacAfee et al., 2020; Wright, 2019). One of the most basic components of reproductive and sexual health services is provision of accurate information about contraception, maternal and newborn health, and HIV/AIDS among other topics (Guttmacher-*Lancet* Commission on Sexual and Reproductive Health Rights; Starrs et al., 2018). Specific to contraception, inadequate knowledge, including misperceptions about efficacy, mechanisms of action, safety, and potential side effects, is reliably associated with ineffective use and method discontinuation among women and men in the general population (Dempsey, Billingsley, Savage, & Korte, 2012; Eisenberg et al., 2012; Hauck & Costescu, 2015). Importantly, many SUD treatment programs are interested in providing this type of information to their patients. Recent state-wide surveys in Michigan and North Carolina found that about a third of the SUD treatment programs who responded already provide some form of pregnancy prevention education/counseling (Klaman et al., 2019; MacAfee, Harfmann, & Terplan, 2017) and more than half of the Michigan facilities that don't are willing to do so (MacAfee et al., 2017).

Research about contraceptive knowledge among women receiving mOUD is very limited and we are not aware of any data available with respect to men. In a qualitative study that investigated knowledge, attitudes, and beliefs about contraceptive use among women enrolled in mOUD and other SUD treatment programs, women demonstrated some knowledge about various contraceptive methods, but also reported numerous misconceptions and inaccuracies (Robinowitz, Muqueeth, Scheibler, Salisbury-Afshar, & Terplan, 2016).

The two quantitative studies of which we are aware utilized items from the Survey of Reproductive and Contraceptive Knowledge created for the National Campaign to Prevent Teen and Unplanned Pregnancy (now known as Power to Decide; Kaye, Suellentrop, & Sloup, 2009; Matusiewicz, Melbostad, & Heil, 2017; Meschke et al., 2018). Matusiewicz et al. (2017) reported the percent of correct responses for questions about contraceptive pills, injectables, intrauterine devices (IUDs), and male condoms were similar across methods (~60%), although knowledge about implants was lower (~40% correct). Utilizing some of the same items, Meschke et al. (2018) reported generally similar results.

While these studies provide important preliminary information about levels of contraceptive knowledge among women receiving mOUD, there are several limitations. First, women in both studies were asked only about a limited range of contraceptive methods and there were no questions about fertility awareness. Second, men receiving mOUD were excluded from both studies. Finally, neither study included a comparison group, which compromises the ability to place results in a larger context. The present study was conducted to address these limitations and provide information about potential deficits in knowledge among women and men receiving mOUD that could be addressed in SUD treatment programs interested in providing a basic reproductive and sexual health service.

Materials and Methods

Patient Groups and Settings

Patients receiving mOUD—We conducted a survey of females and males receiving mOUD from a large, outpatient treatment clinic in Burlington, Vermont. Approximately 1,000 patients receive mOUD from this clinic of which 46% are female. All patients enrolled at this clinic are at least 18 years old due to federal regulations; the average age is 39 years. Overall, 89% of patients are white and <1% are Hispanic or Latino; 15% are married; 26% are unemployed; 70% have Medicaid, 13% have private insurance, and 13% are uninsured. The majority of patients receive methadone (~80%); the average daily dose is 83mg and average time in treatment is 4.5 years. On average, patients started using opioids at 21 years old and 75% report a history of IV drug use.

Research staff recruited patients of any age receiving methadone or buprenorphine at various times throughout a given week (3–4 hours a day, 2–3 times per week) in a designated area of the clinic while patients were waiting to receive their mOUD. Recruitment ended after we had enrolled 100 females and 100 males. After recruitment, we restricted analyses to participants 18–45 years old (85 females, 82 males) because reproductive health services are most relevant to this age group.

Patients receiving Primary Care—For comparison, we conducted a survey of females and males seeking primary care. These patients were selected as a comparison group because they were also receiving an outpatient medical service and could serve as a proxy for the general population. Research staff recruited patients ages 18–45 years old from two University of Vermont Medical Center-affiliated primary care practices in Burlington, Vermont. Approximately 12,000 patients receive primary care from these practices of which 55% are female. All patients are at least 18 years old because these are adult primary care

practices; the average age is 52 years old. Overall, 85% of patients are white and <5% are Hispanic or Latinx; 50% are married; 9% are unemployed; 58% have private insurance, 11% have Medicaid, and 3% are uninsured.

Study recruitment occurred at various times throughout a given week (3–4 hours a day, 2–3 times per week) in designated areas of the practice waiting rooms; practice staff indicated to study staff which patients were in the desired age range. Recruitment ended on the day we projected enrolling approximately the same number of females and males as the mOUD group, with a final sample of 84 females and 81 males in the primary care group.

Measure

We measured knowledge about contraception with the Contraceptive Knowledge Assessment (CKA), a 25-item, multiple-choice assessment created by Haynes and colleagues (Haynes, Ryan, Saleh, Winkel, & Ades, 2017). Although the title of the CKA specifies “contraceptive knowledge,” this tool also assesses fertility awareness and pregnancy prevention self-efficacy. The validity and reliability of this measure were established in part with an ethnically diverse group of medically underserved and underinsured patients with lower literacy (Haynes et al., 2017). Each item has five possible responses with the exception of Item 21, which has six. “I don’t know” is the last response option for all 25 items. We modified five items: Item 4, we replaced the response “semen” with “sperm” because pre-ejaculate does not contain semen (Killick et al., 2011); Item 10, we replaced the response “one month” with “three months” because the vaginal ring can be used continuously for one month, with no hormone-free days (Zieman et al., 2016); Item 24, we replaced the response “five days” with “three days” to reflect U.S. Food & Drug Administration packaging on levonorgestrel emergency contraception (U.S. Food & Drug Administration, 2016); Items 20 and 23, we replaced the response “doctor” with “provider” to be more inclusive of all health care providers. All items and answer choices were below a Flesch-Kincaid 8th-grade reading level, with most registering at a 5th–6th-grade level.

Procedures

We asked participants to provide very basic demographic information before completing a self-administered, anonymous, paper copy of the CKA. Participants typically completed the CKA in less than 15 minutes. Participants received a \$20 gift card for completing the CKA and were offered a copy of the correct answers to take with them.

All study procedures were approved by the Institutional Review Board of the University of Vermont and the administrators of the mOUD treatment clinic and primary care practices.

Statistical Analysis

We summarized the participants’ demographic characteristics as mean and standard error (SE) or number and percentage. To determine the CKA total score, we calculated the percent of correct responses for each participant; “I don’t know” responses were counted as incorrect. We used two-way analyses of variance (ANOVA) to assess differences in the mean percent of correct responses between patient groups (mOUD vs. primary care) and sex (female vs. male). Subsequent analyses included participants’ age as a covariate because

there was a significant difference in mean age between patient groups and between sexes. Controlling for age did not impact the results, so data presented reflect analyses without the covariate. We also provided the total number of correct responses to illustrate the magnitude of the differences. Additionally, logistic regression was used to evaluate patient group and sex differences on individual CKA items based on Wald chi-square tests. All analyses were performed using SAS statistical software version 9.4 (SAS Institute, Cary, NC). Due to a transcription error, Item 12 was incorrectly worded on the paper form and was not included in the analysis of the total score or individual items. Statistical significance was determined based on $p < .05$.

Results

Basic Demographic Characteristics

Basic demographic characteristics of the 332 participants are presented in Table 1. On average, participants in the mOUD group were older than comparison group participants, 32.9 vs. 31.3 years, respectively, $F(1,328) = 6.02$ $p < .05$, and females were younger than males, 31.2 vs. 33.0 years, respectively, $F(1,328) = 6.87$ $p < .01$. The overwhelming majority of participants were white (86%).

CKA Total Score

The CKA total scores for patient group and sex are presented in Table 2. Contraceptive knowledge was lower among participants receiving mOUD relative to the comparison group, $F(1,328) = 11.51$, $p < .001$. The mean (SE) percent of items answered correctly for participants receiving mOUD was 47.7% (1.3%) and 53.8% (1.4%) for the comparison group. We also observed significant differences by sex, $F(1,328) = 36.50$, $p < .001$; the mean (SE) percent of items answered correctly for females was 56.1% (1.4%) and 45.2% (1.2%) for males. There was no significant interaction between patient group and sex $F(1,328) = .08$, $p = .77$.

CKA Individual Items

Individual item scores presented in Table 3 revealed there were differences in contraceptive knowledge between participants receiving mOUD and the comparison group on nine items. Participants receiving mOUD scored lower than participants in the comparison group on all but one of the nine items. Group differences were most pronounced for items that focused on information about IUDs (~20%; items 18, 20, 21), emergency contraception pills (21%; item 24), and fertility awareness (19%; item 1). The one item participants receiving mOUD scored higher on was item 17, which focused on attributes of Depo-Provera.

The findings presented in Table 3 also reveal differences between males and females on 14 items. Females scored higher than males on 12 of the 14 items. Sex differences were largest for items that focused on information about implants (38%; item 23), attributes of short-acting methods (~25%; items 16, 13, 10), and fertility awareness (~20%; items 1, 15). Males scored higher than females on items 4 and 5, which pertain to the withdrawal method and abstinence.

Discussion

Overall, the mean percent of correct responses on the CKA was lower among individuals receiving mOUD relative to the comparison group. However, participants in both groups answered only approximately 50% of the CKA items correctly, indicating significant gaps in contraceptive knowledge for all participants. While the difference between patient groups was statistically significant, it is less clear how clinically important a difference of around 5%, or 1.5 items is, suggesting that lack of knowledge about contraception does not notably contribute to the substantial discrepancy in the rates of contraceptive use and unintended pregnancy among women receiving mOUD compared to the general population.

There was also a difference in the total CKA score by sex. The mean percent of correct responses among females was significantly higher than males. These results were not unexpected given that reproductive and sexual health services have historically focused on women and failed to incorporate education and interventions for men, and the majority of contraceptive methods available are for use by women. Federal health organizations now recommend that women and men of reproductive age should both receive family planning services to support reproductive health (Gavin et al., 2014).

Turning to individual items, the largest patient group differences in knowledge were concentrated around information about IUDs, emergency contraception pills, and fertility awareness. Individuals receiving mOUD were less likely than the comparison group to identify that an IUD is reversible, placed in the uterus, and more effective than contraceptive injectables, condoms, or withdrawal. These group differences in IUD knowledge are somewhat surprising given the relatively similar rates of current IUD use among women receiving mOUD and the general population (Kavanaugh & Jerman, 2018; Meschke et al., 2018). If women receiving mOUD already use IUDs at a rate similar to the general population, despite significant deficits in knowledge about this method, promoting greater knowledge about IUD attributes, efficacy, and use among this population may help further increase use.

Individuals receiving mOUD were also less likely to correctly identify that emergency contraception pills are effective up to 72 hours after intercourse. Given the overall low rates of contraceptive use among individuals receiving mOUD (Black et al., 2012; Cornford, Close, Bray, Beere, & Mason, 2015; Meschke et al., 2018), emergency contraception provides a unique opportunity to prevent pregnancy after unprotected intercourse (Trussell, Raymond, & Cleland, 2018). The colloquial name for emergency contraception pills, “morning after pill,” may be misleading, thereby interfering with optimal use. Consequently, increasing individual knowledge about emergency contraception pills may decrease risk of unintended pregnancy.

There were also differences between patient groups about when during a woman’s menstrual cycle she is most fertile. Poor fertility awareness contributes to an increased likelihood that women/couples will incorrectly assess their risk of pregnancy (Lundsberg et al., 2014) and a decreased likelihood of contraceptive use (Mosher, Jones, & Abma, 2015; Nettleman, Chung, Brewer, Ayoola, & Reed, 2007). Poor fertility awareness may be exacerbated among

individuals receiving mOUD because women receiving mOUD report high rates of menstrual irregularities (Dürsteler-MacFarland et al., 2010; Haber et al., 2017; Santen, Sofsky, Bilic, & Lippert, 1975; Schmittner, Schroeder, Epstein, & Preston, 2005). In the largest and most detailed study of menstrual cycle function among women receiving mOUD, only 28% of more than 100 women had regular menstrual cycles (Schmittner et al., 2005). Therefore, incorporating information about fertility awareness into reproductive health services for individuals receiving mOUD, with an emphasis on the potential positive and negative side effects of OUD treatment medication and other substance use on menstruation, may contribute to decreasing the risk of unintended pregnancy.

Differences in contraceptive knowledge by sex were apparent on the majority of individual CKA items. Although reproductive health services, and family planning in particular, have historically focused on women, more recent research has demonstrated that male partners believe they should participate in decision-making about contraception (Grady, Tanfer, Billy, & Lincoln-Hanson, 1996; Richards, Peters, Sheeder, & Kaul, 2016; Stewart, Ritter, Bateson, McGeechan, & Weisberg, 2017). Therefore, one approach to decreasing unintended pregnancy is to increase men's knowledge about contraceptive methods more broadly and not just focus on male contraceptive methods.

The present study has some limitations. First, we did not collect detailed demographic or reproductive health information from individual participants. Therefore, the effects of these factors on contraceptive knowledge could not be investigated. We also cannot assess the representativeness of our patient groups, although we have no reason to believe that our sampling process resulted in patient groups that are not representative of the populations from which they were recruited. Second, comparisons between results from the present study and the existing literature about contraceptive knowledge among women receiving mOUD are difficult due to differences in methodology (Matusiewicz et al., 2017; Meschke et al., 2018). However, overall, the three studies provide consistent evidence of generally moderate levels of contraceptive knowledge among women receiving mOUD.

The present study expands the current literature about contraceptive knowledge among women receiving mOUD, provides novel information about contraceptive knowledge among men receiving mOUD, and directly compares contraceptive knowledge between individuals receiving mOUD and a sample more representative of the general population (i.e. individuals receiving primary care). Although education about contraception and fertility awareness alone will rarely if ever lead to substantive decreases in unintended pregnancy, all of the major theoretical models that have been applied to contraceptive decision-making include some role of knowledge (Ashton, Giridhar, Holcombe, Madon, & Turner, 2015; Lopez, Grey, Chen, Tolley, & Stockton, 2016). This suggests that increasing knowledge may make other efforts to target this problem in this high-risk population more effective. SUD treatment facilities may not often be able to integrate a full range of reproductive and sexual health services into their programs due to limited resources (Klaman et al., 2019; Klaman, Turner, Lorvick, & Jones, 2020; MacAfee et al., 2017), but many are willing and able to provide accurate information about pregnancy prevention (Klaman et al., 2020; MacAfee et al., 2017). The results of the present study can help these facilities target this effort.

Acknowledgements

The authors are grateful to Kerstin Lipke, Deborah Wachtel, Madelaine Hack, and Megan Detweiler for their contributions to this study.

References

- Ashton L, Giridhar N, Holcombe SJ, Madon T, & Turner E (2015). A review of behavioral economics in reproductive health. UC Berkeley: Center for Effective Global Action White Papers. Retrieved from <https://escholarship.org/uc/item/3m51m11s>
- Black KI, Stephens C, Haber PS, & Lintzeris N (2012). Unplanned pregnancy and contraceptive use in women attending drug treatment services. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, 52(2), 146–150. doi:10.1111/j.1479-828X.2012.01413.x [PubMed: 22335489]
- Cornford CS, Close HJ, Bray R, Beere D, & Mason JM (2015). Contraceptive use and pregnancy outcomes among opioid drug-using women: A retrospective cohort study. *PLoS ONE*, 10(3), 1–13. doi:10.1371/journal.pone.0116231
- Curtis KM, Tepper NK, Jatlaoui TC, Berry-Bibee E, Horton LG, Zapata LB, ... Whiteman MK (2016). U.S. medical eligibility criteria for contraceptive use, 2016. *MMWR Recommendations and Reports*, 65(3), 1–103. doi:10.15585/mmwr.rr6503a1
- Dempsey AR, Billingsley CC, Savage AH, & Korte JE (2012). Predictors of long-acting reversible contraception use among unmarried young adults. *American Journal of Obstetrics and Gynecology*, 206(6), 526.e1–526.e5. doi:10.1016/j.ajog.2012.02.014 [PubMed: 22425402]
- Dürsteler-MacFarland KM, Fischer DA, Mueller S, Schmid O, Moldovanyi A, & Wiesbeck GA (2010). Symptom complaints of patients prescribed either oral methadone or injectable heroin. *Journal of Substance Abuse Treatment*, 38(4), 328–337. doi:10.1016/j.jsat.2010.01.008 [PubMed: 20206457]
- Eisenberg DL, Secura GM, Madden TE, Allsworth JE, Zhao Q, & Peipert JF (2012). Knowledge of contraceptive effectiveness. *American Journal of Obstetrics and Gynecology*, 206(6), 479 e1–e9. doi:10.1016/J.AJOG.2012.04.012 [PubMed: 22521458]
- Finer LB, & Zolna MR (2016). Declines in unintended pregnancy in the United States, 2008–2011. *New England Journal of Medicine*, 374(9), 843–852. doi:10.1056/NEJMs1506575 [PubMed: 26962904]
- Gavin L, Moskosky S, Carter M, Curtis K, Glass E, Godfrey E, ... Zapata L (2014). Providing quality family planning strategies: Recommendations of CDC and the U.S. Office of Population Affairs. *MMWR Recommendations and Reports*, 63(4), 1–54. Retrieved from <https://www.cdc.gov/mmwr/pdf/rr/rr6304.pdf>
- Grady WR, Tanfer K, Billy JOG, & Lincoln-Hanson J (1996). Men's perceptions of their roles and responsibilities regarding sex, contraception and childrearing. *Family Planning Perspectives*, 28(5), 221. doi:10.2307/2135841 [PubMed: 8886765]
- Haber PS, Elsayed M, Espinoza D, Lintzeris N, Veillard AS, & Hallinan R (2017). Constipation and other common symptoms reported by women and men in methadone and buprenorphine maintenance treatment. *Drug and Alcohol Dependence*, 181, 132–139. doi:10.1016/j.drugalcdep.2017.09.024 [PubMed: 29054032]
- Hauck B, & Costescu D (2015). Barriers and misperceptions limiting widespread use of intrauterine contraception among Canadian women. *Journal of Obstetrics and Gynaecology Canada*, 37(7), 606–616. doi:10.1016/S1701-2163(15)30198-5 [PubMed: 26366817]
- Haynes MC, Ryan N, Saleh M, Winkel AF, & Ades V (2017). Contraceptive knowledge assessment: Validity and reliability of a novel contraceptive research tool. *Contraception*, 95, 190–197. doi:10.1016/j.contraception.2016.09.002 [PubMed: 27621043]
- Kavanaugh ML, & Jerman J (2018). Contraceptive method use in the United States: Trends and characteristics between 2008, 2012 and 2014. *Contraception*, 97, 14–21. doi:10.1016/j.contraception.2017.10.003 [PubMed: 29038071]

- Kaye K, Suellentrop K, & Sloup C (2009). The Fog Zone: How misperceptions, magical thinking, and ambivalence put young adults at risk for unplanned pregnancy. Washington DC Retrieved from <https://powertodecide.org/what-we-do/information/resource-library/fog-zone>
- Killick SR, Leary C, Trussell J, & Guthrie KA (2011). Sperm content of pre-ejaculatory fluid. *Human Fertility*, 14(1), 48–52. doi:10.3109/14647273.2010.520798 [PubMed: 21155689]
- Klaman SL, Lorvick J, & Jones HE (2019). Provision of and barriers to integrating reproductive and sexual health services for reproductive-age women in opioid treatment programs. *Journal of Addiction Medicine*, 13(6), 422–429. [PubMed: 31689259]
- Klaman SL, Turner K, Lorvick J, & Jones HE (2020). Integrating reproductive and sexual health education and services into opioid use disorder treatment programs : A qualitative study. *Journal of Addiction Medicine*, 00(00), 1–8. doi:10.1097/ADM.0000000000000657
- Lopez LM, Grey TW, Chen M, Tolley EE, & Stockton LL (2016). Theory-based interventions for contraception. *Cochrane Database of Systematic Review*, (11), 1–134. doi:10.1002/14651858.CD007249.pub5.www.cochranelibrary.com
- Lundsberg LS, Pal L, Gariepy AM, Xu X, Chu MC, & Illuzzi JL (2014). Knowledge, attitudes, and practices regarding conception and fertility: A population-based survey among reproductive-age United States women. *Fertility and Sterility*, 101(3), 767–774.e2. doi:10.1016/j.fertnstert.2013.12.006 [PubMed: 24484995]
- MacAfee LK, Harfmann RF, Cannon LM, Minadeo L, Kolenic G, Kusunoki Y, & Dalton VK (2020). Substance use treatment patient and provider perspectives on accessing sexual and reproductive health services: Barriers, facilitators, and the need for integration of Care. *Substance Use and Misuse*, 55(1), 95–107. doi:10.1080/10826084.2019.1656255 [PubMed: 31455128]
- MacAfee LK, Harfmann R, & Terplan M (2017). Reproductive health services offered at substance use treatment facilities in Michigan Poster session presented at the American Society of Addiction Medicine (ASAM) annual conference, April 7, 2017, New Orleans, LA.
- Matusiewicz AK, Melbostad HS, & Heil SH (2017). Knowledge of and concerns about long-acting reversible contraception among women in medication-assisted treatment for opioid use disorder. *Contraception*. doi:10.1016/j.contraception.2017.07.167
- Meschke LL, McNeely C, Brown KC, & Prather JM (2018). Reproductive health knowledge, attitudes, and behaviors among women enrolled in medication-assisted treatment for opioid use disorder. *Journal of Women's Health*, 27(10), jwh.2017.6564. doi:10.1089/jwh.2017.6564
- Mosher W, Jones J, & Abma J (2015). Nonuse of contraception among women at risk of unintended pregnancy in the United States. *Contraception*, 92(2), 170–176. doi:10.1016/j.contraception.2015.05.004 [PubMed: 25998937]
- Nettleman MD, Chung H, Brewer J, Ayoola A, & Reed PL (2007). Reasons for unprotected intercourse: Analysis of the PRAMS survey. *Contraception*, 75(5), 361–366. doi:10.1016/j.contraception.2007.01.011 [PubMed: 17434017]
- Poulton G, Parlier AB, Scott KR, Fagan EB, & Shelley L (2015). Contraceptive choices for reproductive age women at methadone clinics in western North Carolina. *MAHEC Online Journal of Research*, 2(2), 1–11.
- Richards MJ, Peters M, Sheeder J, & Kaul P (2016). Contraception and adolescent males: An opportunity for providers. *Journal of Adolescent Health*, 58(3), 366–368. doi:10.1016/j.jadohealth.2015.10.011
- Robinowitz N, Muqueeth S, Scheibler J, Salisbury-Afshar E, & Terplan M (2016). Family planning in substance use disorder treatment centers: Opportunities and challenges. *Substance Use & Misuse*, 51(11), 1477–1483. doi:10.1080/10826084.2016.1188944 [PubMed: 27440391]
- Santen FJ, Sofsky J, Bilic N, & Lippert R (1975). Mechanism of action of narcotics in the production of menstrual dysfunction in women. *Fertility and Sterility*, 26(6), 538–548. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/236938> [PubMed: 236938]
- Schmittner J, Schroeder JR, Epstein DH, & Preston KL (2005). Menstrual cycle length during methadone maintenance. *Addiction*, 100(6), 829–836. doi:10.1111/j.1360-0443.2005.01091.x [PubMed: 15918813]

- Smith C, Morse E, & Busby S (2018). Exploring the perceived barriers to long-acting reversible contraception in women who are in treatment for opioid addiction. *Journal of Perinatal and Neonatal Nursing*, 33(2), E3–E11.
- Starrs AM, Ezech AC, Barker G, Basu A, Bertrand JT, Blum R, ... Ashford LS (2018). Accelerate progress—sexual and reproductive health and rights for all: Report of the Guttmacher–Lancet Commission. *The Lancet*, 391, 2642–2692. doi:10.1016/S0140-6736(18)30293-9
- Stewart M, Ritter T, Bateson D, McGeechan K, & Weisberg E (2017). Contraception - what about the men? Experience, knowledge and attitudes: A survey of 2438 heterosexual men using an online dating service. *Sexual Health*, 14, 533–539. doi:10.1071/SH16235 [PubMed: 28618247]
- Trussell J, Raymond EG, & Cleland K (2018). Emergency contraception: A last chance to prevent unintended pregnancy. Princeton, NJ Retrieved from <http://ec.princeton.edu/questions/ec-review.pdf>
- U.S. Food & Drug Administration. (2016). Postmarket drug safety information for patients and providers - Plan B (0.75mg levonorgestrel) and Plan B One-Step (1.5 mg levonorgestrel) tablets information Retrieved February 19, 2018, from <https://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm109775.htm>
- Wright TE (2019). Integrating reproductive health services into opioid treatment facilities: A missed opportunity to prevent opioid-exposed pregnancies and improve the health of women who use drugs. *Journal of Addiction Medicine*, 13(6), 420–421. doi:10.1097/ADM.0000000000000532 [PubMed: 31689258]
- Zieman M, Hatcher RA, Allen AZ, Lathrop E, & Haddad L (2016). *Managing contraception 2016* (13th ed.). Tiger, Georgia: Bridging The Gap Foundation.

Table 1.

Participant Characteristics

	Overall N=332	Patient Group		<i>p</i> value	Sex		<i>p</i> value
		mOUD n=167	PC n=165		Female n=169	Male n=163	
Age (mean yrs. $\pm$ SE)	32.1 $\pm$ 0.3	32.9 $\pm$ 0.4	31.3 $\pm$ 0.5	<.05	31.2 $\pm$ 0.5	33.0 $\pm$ 0.5	<.01
Race/Ethnicity <i>n</i> (%)				.29			.44
White	286 (86.1)	145 (86.8)	141 (85.5)		147 (87.0)	139 (85.3)	
Hispanic/Latino	8 (2.4)	3 (1.8)	5 (3.0)		4 (2.4)	4 (2.5)	
Black/African American	11 (3.3)	3 (1.8)	8 (4.9)		3 (1.8)	8 (4.9)	
Other Race/Ethnicity	27 (8.1)	16 (9.6)	11 (6.7)		15 (8.9)	12 (7.3)	

Note. mOUD: Medication treatment for opioid use disorder group. PC: Primary care group. *p* values based on total two-way analysis of variance analysis.

Table 2.

Contraceptive Knowledge Assessment (CKA) Scores

	N	% Correct	Number Correct	<i>p</i> value
Overall	332	50.7 ± 1.0	12.2 ± 0.2	
Patient Group				<.001
mOUD	167	47.7 ± 1.3	11.4 ± 0.3	
PC	165	53.8 ± 1.4	12.9 ± 0.3	
Sex				<.001
Female	169	56.1 ± 1.4	13.5 ± 0.3	
Male	163	45.2 ± 1.2	10.8 ± 0.3	
Sex by Patient Group				.77
Female				
mOUD	85	53.3 ± 1.7	12.7 ± 0.4	
PC	84	58.9 ± 2.1	14.1 ± 0.5	
Male				
mOUD	82	41.9 ± 1.7	10.04 ± 3.7	
PC	81	48.5 ± 1.7	11.6 ± 0.4	

Note. Values are mean ± SE. mOUD: Medication treatment for opioid use disorder group. PC: Primary care group. *p* values based on two-way analyses of variance analysis.

Table 3.

Correct Responses to Individual Contraceptive Knowledge (CKA) Items

	Patient Group				Sex	
	mOUD	PC	p value		Female	Male
	n=167	n=165			n=169	n=163
1. When during a woman's cycle is she most likely to become pregnant?	28%	47%	<.001		47%	28%
2. How long can sperm stay alive in a woman's body?	28%	30%	.68		34%	24%
3. Which of the following choices is TRUE about pregnancy?	90%	96%	.06		92%	94%
4. Which of the following choices is TRUE about withdrawal, or the "pull-out" method?	94%	90%	.19		89%	95%
5. Which birth control method guarantees you will not become pregnant?	83%	85%	.43		80%	88%
6. Which is the <i>only</i> birth control method that helps prevent infections?	77%	81%	.43		79%	79%
7. All of the following are TRUE about using male condoms EXCEPT:	60%	76%	<.01		65%	71%
8. Hormonal birth control comes in which of the following forms?	71%	84%	<.01		81%	74%
9. Which one is NOT a benefit of hormonal birth control?	40%	42%	.66		49%	33%
10. How long should the vaginal ring (NuvaRing) stay in place before changing it?	18%	19%	.82		29%	7%
11. Which of the following make hormonal birth control less effective?	31%	25%	.23		31%	25%
13. Birth control pills can have which of the following ingredients?	54%	61%	.23		69%	45%
14. You should <i>NOT</i> use the birth control pill if you have any of the following:	38%	33%	.36		38%	33%
15. How long after a woman stops using birth control can she become pregnant?	71%	66%	.31		78%	59%
16. If you forget to take one birth control pill and remember the next day, what should you do?	24%	28%	.97		40%	12%
17. Which of the following is FALSE about Depo-Provera (the "shot")?	22%	11%	<.01		21%	12%
18. Which of the following birth control methods may be reversed if you decide you want to become pregnant?	44%	66%	<.001		60%	50%
19. Which birth control method is not easily noticed by a partner?	71%	81%	<.05		78%	73%
20. A provider places an IUD (intrauterine device) in what part of the body?	22%	43%	<.001		35%	30%
21. Which method of birth control is the best at preventing pregnancy?	25%	44%	<.001		42%	26%
22. Which choice is FALSE about IUDs (intrauterine devices)?	31%	38%	.11		43%	26%
23. A provider places the birth control implant (Nexplanon) in what part of the body?	61%	62%	.87		80%	42%
24. How soon after sex must the "morning after pill" (emergency contraception) be used to be effective?	7%	28%	<.001		24%	11%
25. How can you get the emergency contraception pill (i.e. the morning after pill)?	52%	55%	.57		59%	48%

Note. mOUD: Medication treatment for opioid use disorder group. PC: Primary care group. *p* values based on Wald chi-square test derived from logistic regression.