

Contraception and mental health: a commentary on the evidence and principles for practice

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Among the most prevalent and disabling chronic diseases affecting reproductive-aged women worldwide, depression and anxiety can contribute to adverse reproductive health outcomes, including an increased risk of unintended pregnancy and its health and social consequences. For women with these common mental health conditions who want to avoid an unintended pregnancy, effective contraception can be an important strategy to maintain and even improve health and well-being. Reproductive health clinicians play a critical role in providing and managing contraception to help women with mental health considerations achieve their desired fertility. In this commentary, we review the literature on relationships between mental health and contraception and describe considerations for the clinical management of contraception among women with depression and anxiety. We discuss issues related to contraceptive method effectiveness and adherence concerns, mental health—specific contraceptive method safety and drug interaction considerations, and clinical counseling and management strategies. Given important gaps in current scientific knowledge of mental health and contraception, we highlight areas for future research.

Key words: anxiety, contraception, contraceptive management, depression, mental health, unintended pregnancy

Depressive and anxiety disorders are among the leading causes of disability in the United States and worldwide.¹ Compared with men, US women are 70% more likely than men to experience a depressive disorder and 60% more likely to experience an anxiety disorder.¹ Approximately 12% of women will experience major depression in their lifetime; 8.4% will experience a depressive disorder each year.¹ Women experience anxiety disorders at even higher rates, and anxiety disorders are highly comorbid with depression.¹ And

although common, depression and anxiety disorders often go undetected and untreated among reproductive-aged women.^{1,2} In recent years, less than half of US women aged 15-44 years with a major depressive episode received a mental health diagnosis and less than half received treatment.^{1,2} Moreover, poor, unemployed, and less educated women experience higher rates of mental health disorders and lower rates of mental health detection and treatment than their socially advantaged counterparts; racial/ethnic minority

women receive mental health care at even lower rates.^{1,2}

Mental health, unintended pregnancy, and reproductive outcomes

Women with depression and anxiety experience an elevated risk of unintended pregnancy, and those pregnancies may be more likely to end in induced abortion, compared with women without depression and anxiety.³ Depression and anxiety are precursors to a host of negative perinatal and postpartum outcomes, including maternal and infant morbidity, obstetrical complications, preterm labor, stillbirth, low birthweight, and antepartum and postpartum depression,⁴ especially when pregnancies are unintended. Poor, underinsured, undereducated, and minority women disproportionately suffer mental health morbidity, low rates of detection and treatment, and adverse reproductive outcomes, including unintended pregnancy.^{1,2,5}

Relationships between mental health and contraception

Effects of contraception on mental health. Deficiencies in neurotransmitters that have an impact on mood (serotonin, norepinephrine, dopamine, γ -aminobutyric acid, and peptides) have been implicated in clinical studies of depression and

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anxiety, and genetic predisposition and psychosocial stressors appear to be important precursors to neurotransmitter deficiencies.¹ Contraceptive researchers in the 1960s and 1970s hypothesized that large dosages of synthetic estrogens and progestins in combined oral contraceptive pills (COCs) (eg, 5 mg norethynodrel, 75 μ g mestranol) could potentially interact with mood-related neurotransmitters and neurotransmitter metabolism.⁶

Although there have been no published clinical trials to date using hormonal bioassays or brain imaging to clarify these relationships, newer evidence suggests that the steroidal activity of lower-dosage modern contraceptives do not have a clinically relevant physiological impact on women's mood or mood-related neuroendocrine functioning.⁷ In a systematic review of studies examining COC pharmacological properties and mood, Robinson et al⁷ found no evidence for an association between the intrinsic biochemical mechanisms of COCs and mood side effects reported by COC users.

In the 2010 Medical Eligibility Criteria for Contraceptive Use report, the Centers for Disease Control and Prevention (CDC) concluded there are no contraindications to hormonal contraception for women with depression, citing a lack of evidence supporting a causal relationship. Prospective population-based cohort studies and clinical placebo-controlled trials have consistently reported similar or even lower rates of depression or mood symptoms in COC users compared with nonusers.⁸ More recent pharmacological research on fourth-generation drospirenone-containing COCs found improvements of premenstrual dysphoric disorder (PMDD) mood symptoms. Research on the depot medroxyprogesterone acetate injectable (DMPA), transdermal patch, vaginal ring, subdermal implant, and levonorgestrel-releasing and copper-containing intrauterine devices (IUDs) has also found no evidence of negative mood effects with the use of these methods.⁹ Given that some recent studies have relied upon

observational and cross-sectional designs and small sample sizes, additional research that uses rigorous prospective, longitudinal, and randomized controlled trial designs is needed to provide a more definitive comment on the null effects of contraception on women's mental health.

Effects of mental health on contraceptive behavior. A growing number of studies have documented higher rates of contraceptive nonuse, misuse, and discontinuation among women with depressive, anxiety, and related stress and distress symptoms compared with women without symptoms. These findings, which have been consistent across studies, populations, and settings, have been most widely noted for COCs and condoms but have also been demonstrated for DMPA, IUDs, and implants.^{9,10}

The impact of mental health on contraceptive method selection is less clear. Some clinical and population-based studies of nonpregnant women have found less effective method use (ie, condoms and withdrawal vs COCs and long-acting reversible contraception) to be associated with higher depression and stress symptoms,¹⁰ whereas a study of postabortion patients found higher rates of IUD use was associated with greater mental distress symptoms.¹¹ Reasons for these differences across contexts are not fully apparent and warrant further research.

Little science exists to explain how or why mental health influences contraceptive behavior. Psychological research suggests that altered cognitive processes may contribute to heightened perceptions of physical symptoms among women with mental health conditions.¹² COC discontinuation rates from perceived mood symptoms are not uncommon (range, 14–21% in some studies), despite the evidence refuting causal associations.

Depressed or anxious women may also internalize negative or incorrect information about contraception and have exaggerated concerns about risks and side effects.¹² Additionally, risk assessment, planning, social learning,

decreased motivation, and desire for self-care, excessive worry, and diminished perceptions of susceptibility to pregnancy may have an impact on contraceptive decision-making processes and lead to suboptimal contraceptive choices among women with depression and anxiety.¹² Additional studies are needed to test these mechanistic theories.

Principles for clinical management of mental health and contraception

Mental health and the reproductive health encounter

Depression and anxiety may have important implications for family planning, and reproductive health settings offer an optimal opportunity to improve detection and treatment of these common mental health conditions among reproductive-aged women. Risk factors for mental health conditions should be identified in the past medical history, including personal or family history of depression and anxiety or other mental health disorders, other chronic medical illnesses such as cancer, stroke, or HIV/AIDS, and having adverse life experiences, including exposure to physical and sexual violence or trauma.¹

Signs and symptoms of depression and anxiety can have an impact on patient-provider communication and interaction in important ways but may not be obvious to the provider or patient.^{13–16} Lack of awareness and insight into mental health issues and perceived stigma are barriers to disclosure of mental health symptoms. Assessment of psychological well-being and its impact on sexual and reproductive health functioning should be a routine component of the patient interview. Patience, empathy, and use of reflective listening, a nonjudgmental tone, and open-ended questions may facilitate women's comfort in disclosing mental health issues.^{13–16}

Discussions can be initiated with an educational statement such as, "Did you know that more than one fifth of women will have symptoms that meet criteria for depression in their lifetime? Because depression is so common, I like to check

in with all my patients about their own mental health.⁷ Observing for a sad voice, anxious expressions, lethargic posture, or a clinical presentation of multiple, vague complaints, nonspecific symptoms, or pain-related syndromes (eg, nonspecific vulva, pelvic, vaginal, coital, or menstrual-related pain, headaches, or gastrointestinal disturbances) may alert providers to an underlying depressive or anxiety disorder.¹³⁻¹⁶ Providers should also monitor for transference: feeling down, sad, and upset after seeing a distressed patient.¹³

In busy clinical settings, standardized mental health screening is an efficient, effective, and feasible way to improve detection of depression and anxiety and thus should be used routinely and systematically, including with all well-woman examinations and new patients.¹⁷ Table 1 highlights commonly used, evidence-based screening instruments. The Prime-MD Patient Health Questionnaire (PHQ) is perhaps the most commonly used, preferred screening tool in current primary care and other nonpsychiatric settings and can be seamlessly included in electronic medical record charting. Standardized diagnostic criteria such as those delineated in the Diagnostic and Statistical Manual of Mental Disorders should be followed when diagnosing a depressive or anxiety disorder.¹⁷

Differential diagnoses for new-onset mental health symptoms may include hypothyroidism, diabetes mellitus, anemia, cancer, multiple sclerosis, eating disorders, substance abuse disorders, acute stress or grief, or use of certain medications such as beta-blockers or calcium channel blockers, glucocorticoids, or gonadotropin-releasing hormone agonists. These conditions can cause symptoms that mimic depression or anxiety and should be ruled out.¹³⁻¹⁶ Provision of basic information on the prevalence, signs, symptoms, and treatment options for depression, anxiety, and related disorders may facilitate an open dialog between the patient and provider. Referral systems should be in place for women who require further evaluation and treatment by a mental health specialist.

Depression, anxiety, and contraceptive management

For the most part, women with depression and anxiety are eligible for the full range of contraceptive methods, and method selection should occur through shared decision making between the patient and provider, taking into account individual health circumstances, contraceptive preferences, and fertility goals (Table 2). In the CDC Medical Eligibility Criteria for Contraceptive Use, depression is a category 1, indicating no restrictions for use of any form of hormonal contraception. Modern pharmacological antidepressant agents, including the most commonly used selective serotonin reuptake inhibitors (SSRIs; such as fluoxetine, citalopram, escitalopram, and sertraline) and serotonin norepinephrine reuptake inhibitors (SNRIs; such as venlafaxine and duloxetine), do not appear to interact with hepatic metabolism of hormonal contraceptives, including COCs.^{13-16,18}

In contrast, tricyclic antidepressants (TCAs; such as amitriptyline or nortriptyline) and monoamine oxidase inhibitors (MAOIs; such as phenelzine and tranylcypromine), which are older-generation antidepressant agents used in treatment-refractory chronic depression, are highly interactive with foods and drugs and may interact with contraceptive steroid metabolism in the liver, potentially leading to decreased contraceptive efficacy or antidepressant side effects or toxicity.^{13-16,18} St John's wort (*hypericum perforatum*), an over-the-counter antidepressant therapy, may also induce the cytochrome P450 system and subsequently reduce contraceptive steroid availability, although existing evidence is inconsistent.¹⁹

For women who require more intensive psychiatric treatment with TCAs, MAOIs, or those using St John's wort, locally acting methods such as the levonorgestrel-releasing IUD or copper-containing IUD are safe alternatives. Nonpharmacological therapies, including cognitive behavioral therapy, interpersonal psychotherapy, and adjunct therapies like exercise, sleep, and healthy diet, should not interfere with contraception or preclude the use of any methods and

may reinforce problem-solving and coping skills and self-care techniques that mutually benefit family-planning decision making and behaviors.¹³⁻¹⁶

Potential contraceptive adherence issues may be an important factor for appropriate method selection for women with depression and anxiety. The greatest body of evidence linking mental health and contraceptive side effects, misuse, and discontinuation has been documented for user-dependent methods, including condoms and COCs.²⁰ Long-acting reversible contraception methods require little user burden, are cost effective, and offer the greatest contraceptive effectiveness, potentially making them ideal options for women with mental health conditions.²¹ For women who do not prefer long-acting methods, DMPA, the vaginal ring, or transdermal patch are alternative options.

For COC selection and management, several strategies may be clinically useful. Research has suggested that women's experiences with perceived side effects, including mood, are similar across different types of COCs, and most women do well with any COC.²² In early high-dose COC formulations, a dose-response relationship with mood side effects was noted.²¹ So although newer research does not support such a relationship with modern doses, providers may consider formulations with lower estrogen dosages (ie, 20 μg vs >20 μg).²³ This should be balanced with the likelihood of other side effects, including irregular bleeding as well as potentially reduced effectiveness with missed pills.²³

Widely used levonorgestrel- and norgestrel-containing COCs are not known to contribute to mental health symptoms, and some research has shown improved mood symptoms among women taking second-generation COCs compared with women on placebo.^{8,24} Newer drospirenone-containing COCs are approved by the Food and Drug Administration for the treatment of mood symptoms occurring specifically with PMDD and should be an option for women with depression and anxiety. Additionally, cyclic mood symptoms

TABLE 1
Screening instruments for depression and anxiety

| Instrument name | Items; scoring criteria | Example items |
|---|---|--|
| Prime-MD PHQ ^{33,34} | 2- and 9-item versions depression subscale; 0, not at all to 3, nearly every day. | Over the last 2 weeks, how often have you ... 1. Had little interest or pleasure in doing things. 2. Been feeling down, depressed, or hopeless. 3. Had trouble concentrating on things such as reading the newspaper or watching television. |
| | 5-item anxiety subscale, yes or no | In the last 4 weeks, have you had ... 1. An anxiety attack, suddenly feeling fear or panic? 2. Has this ever happened before? 3. Do these attacks bother you a lot, or are you worried about having another attack? |
| CES-D ³⁵ | 10- and 20-item versions; 0, rarely or none of the time to 3, most or all of the time | During the past week, how often have you experienced ... 1. I was bothered by things that usually don't bother me. 2. I felt that everything I did was an effort. 3. I talked less than usual. |
| Beck Depression Inventory—Revised ³⁶ | 21 groups of statements; choose 1 of each group | Pick the 1 statement of each group that best describes how you have been feeling during the past 2 weeks, including today. Group 1 I do not feel sad. I feel sad much of the time. I am sad all the time. I am so sad or unhappy that I can't stand it. |
| DASS ³⁷ | 21- and 42-item versions; 0, not at all to 3, very much or most of the time | How much has each statement applied to you over the past week? 1. I felt downhearted and blue. 2. I felt that life was meaningless. 3. I felt I was pretty worthless. 4. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat). 5. I was aware of dryness of my mouth. 6. I was worried about situations in which I might panic or make a fool of myself. |
| BAI ³⁸ | 21 items; 0, not at all to 3, severely—it bothered me a lot | Rate how much you have been bothered by each of the following in the last week. 1. Numbness or tingling 2. Terrified or afraid 3. Fear of losing control |
| Spielberger State and Trait Anxiety ³⁹ | 40 items; 0, almost never to 3, almost always | Rate how often the statement is true about you. 1. I am tense. 2. I am worried. 3. I feel calm. 4. I worry too much over something that really doesn't matter. 5. I am content; I am a steady person. |

BAI, Beck Anxiety Inventory; CES-D, Center for Epidemiological Study of Depression Scale; DASS, Depression Anxiety Stress Scales; Prime-MD PHQ, Primary Care Evaluation of Mental Disorders Patient Health Questionnaire.
Adapted from Hall et al.⁴⁰

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occurring during ovulation or menses may respond well to steady dose monophasic (vs multiphasic) formulations.²⁵ Estrogen withdrawal mood symptoms during COC placebo weeks may respond to extended cycle regimens (eg, 24/4,

84/7) or continuous dosing (ie, skipping inactive pills).²⁶

In specific cases, such as postpartum and perimenopausal depression, women may not be aware of their risk of unintended pregnancy and may also have

unique contraceptive considerations. Estrogen-containing contraceptives are generally not recommended during the first postpartum month among breastfeeding women because of possible reduction in breast milk production²¹;

TABLE 2
Considerations for contraceptive method options for women with depression and anxiety

| Concerns | Contraceptive methods | | |
|--|---|---|--|
| | Long-acting reversible contraceptives (copper-containing IUD, levonorgestrel IUD, subdermal implants) | Progestin-only contraceptives (depot medroxyprogesterone acetate injectable [DMPA], POPs) | Combined hormonal contraceptives (COCs, vaginal ring, transdermal patch) |
| Adherence | ++ | DMPA + POPs +/- | +/- |
| Mood side effect | ++ | + | + |
| Menstrual irregularity | Copper IUD ++ Levonorgestrel IUD +/- Implant +/- | DMPA+ POPs +/- | ++ |
| Postpartum depression and breast-feeding ^a | Copper IUD ++ Levonorgestrel IUD + Implant + | + | +/- |
| Perimenopausal depression | + | + | If no contraindications to estrogen: COCs ++ Ring/patch + |
| PMDD | + | + | COCs with drospirenone ++ Ring/patch + |
| Medical comorbidities (cardiovascular risks, age older than 35 y and a smoker, other estrogen contraindications) | Copper IUD ++ Levonorgestrel IUD + Implant + | DMPA + POPs + | - |
| Modern antidepressant use (SSRIs or SNRIs) | + | + | + |
| Older-generation antidepressant use (TCAs, MAOIs, St John's wort); mood stabilizer/antiepileptic use | Copper IUD ++ Levonorgestrel + Implant - | DMPA + POPs - | - |
| Intimate partner violence | ++ | DMPA ++ POP +/- | +/- |

++ indicates highly acceptable (first-line option); + indicates acceptable option; +/- indicates acceptable but not optimal option; - indicates unacceptable option.

COC, combined oral contraceptive; DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; MAOI, monoamine oxidase inhibitor; PMDD, premenstrual dysphoric disorder; POP, progestin-only pill; SNRI, serotonin norepinephrine reuptake inhibitor; SSRI, selective serotonin reuptake inhibitor; TCA, tricyclic antidepressant.

^a Combined oral contraceptives are acceptable (Centers for Disease Control and Prevention category 2) after the first postpartum month among women who are breast-feeding. Adapted from Hall et al.⁴⁰

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instead, the copper-containing IUD or progestin-only methods including the levonorgestrel-releasing IUD, subdermal implant, DMPA, or progestin-only pills can be used. For ovulating perimenopausal women with hormonal and mood fluctuations or menstrual and vasomotor symptoms, COCs, the patch, or the ring may also treat symptoms.²¹ Women's cardiovascular risks, tobacco use, and other contraindications to estrogen should be assessed.

Counseling strategies for contraception and mental health

Women with depression and anxiety, as well as all women, may benefit from education and counseling strategies that deliver repeated and specific information on user-related method effectiveness rates and the relationship of contraceptive effectiveness to mental well-being (eg, daily pills require diligence and motivation for correct use, with which depression or anxiety

may interfere).²⁷ Providers should monitor for and counsel on adherence issues; reports of missing dosages or discontinuation of an antidepressant may alert the provider to contraceptive misuse or discontinuation.²⁸

Evidence-based counseling techniques like motivational interviewing can be used to focus attention on specific problematic behaviors (eg, frequently missed pills, circumstances around condom nonuse) to evoke motivation for change

by increasing confidence, readiness, and planning to improve contraceptive behaviors^{16,29} (for instance, the use of cell phone reminders or a consistent daily pill-taking routine).

Providers should also work to dispel myths and misperceptions of side effects and reinforce the benefits and positive non-contraceptive effects of modern methods. Finally, counseling should include information on dual-method use (ie, condoms) and sexual risk behavior given documented higher rates of sexually transmitted infections among women with depression and anxiety.³⁰

An assessment of other dimensions of women's lives that may have an impact on mental and reproductive health, including financial hardship, lack of social support, relationship violence, and other stressful life events may identify potential triggers of depression and anxiety, especially among socially disadvantaged groups of women who disproportionately experience these risk factors. Women in violent or controlling relationships may experience reproductive coercion, birth control sabotage, intentional exposure to sexually transmitted infections, unintended pregnancy, and lack of control over their pregnancy outcomes; they may also have limited access to health services and contraception.^{31,32}

Routine screening for intimate partner violence can identify women who may have special contraceptive and mental health considerations. Inconspicuous methods that maximize contraceptive control and effectiveness and minimize the likelihood of exacerbating partner resistance or violence, such as DMPA, may be helpful. IUDs or the implant may offer other subtle highly effective options that require less frequent health service visits. Information on local resources for counseling or mental health services and insurance or medication assistance programs should be readily available in reproductive health clinical settings.

Conclusion

Depression and anxiety are common among reproductive-aged women and

have significant implications for reproductive health, including the risk of unintended pregnancy and adverse perinatal and postpartum outcomes. There has been a lack of attention to mental health in family planning contexts, and significant research gaps exist and preclude an in-depth understanding of the most effective approaches for contraceptive management among women with depression and anxiety. Although additional research can more comprehensively identify the role of mental health in contraceptive management (and vice versa), reproductive health providers should prioritize contraceptive counseling and management for women with depression and anxiety who want to avoid unintended pregnancy. Ultimately, mental health promotion may reduce adverse pregnancy-related outcomes, improve family-planning experiences, and help achieve reproductive goals for women, their families, and society. ■

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