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Current and past depressive symptoms and contraceptive effectiveness method selected among women seeking reproductive health services

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Abstract

Rationale: More thoroughly understanding the association between elevated depressive symptoms and effectiveness level of contraceptive method selected at a reproductive health visit could help women prevent unintended pregnancy.

Objective: This study examined how the association between both current and past depressive symptoms and effectiveness level of contraceptive method selected at a clinic visit varies by type of reproductive health visit.

Methods: Current and past depressive symptoms and contraceptive method selected were assessed among 1,215 women aged 18 to 25 years seeking general reproductive health or abortion services at 40 community clinics throughout the United States. Using standard categories of effectiveness based on pregnancy rates during typical use, women's contraceptive method selected was coded as a low (e.g., no method, withdrawal, condoms), moderately (pill, patch, ring, or shot), or highly effective method (IUD, sterilization, implant). Depression status was divided into four categories: 1) no elevated depressive symptoms ever, 2) current elevated depressive symptoms only, 3) past elevated depressive symptoms only, and 4) past and current elevated depressive symptoms. Visit type, general reproductive health versus abortion care, was a moderator. The

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interaction effect between depressive symptoms and visit type on contraceptive method effectiveness level chosen was estimated with multinomial logistic regression analyses.

Results: In general, reproductive health visits, having both elevated current and past depressive symptoms increased women's likelihood of choosing low versus moderately effective methods ($RRR = 5.63$, 95% $CI = 2.31$ to 13.71 , $p < .0005$). In contrast, among abortion patients, only current elevated depressive symptoms were associated with choosing high versus moderate effectiveness methods ($RRR = 1.74$, 95% $CI = 1.06$ to 2.86 , $p = .029$).

Conclusion: Results suggest that considering both women's current and past elevated depressive symptoms and the type of reproductive health visit may assist providers in helping women prevent unintended pregnancy.

Keywords

current and past depressive symptoms; contraceptive choice; abortion care and reproductive health services

Introduction

Approximately half of pregnancies in the United States are unintended and women with a history of an abortion have a higher incidence of a subsequent unintended pregnancy than other women (Finer & Zolna, 2016; Upadhyay et al., 2012). Unintended pregnancies are associated with negative outcomes for mother, child, family, and society (Sonfield et al, 2014). The contraceptive method a woman or couple uses directly and strongly relates to women's risk of pregnancy (Sonfield et al, 2014; Trussell et al., 2018). In fact, effectiveness level of contraceptive methods is calculated by pregnancy rates during perfect and typical use (Trussell et al., 2018). Perfect use occurs when women or couples follow directions for method use exactly and consistently. Typical use accounts for user error of the contraceptive method and is actual, real-life use, including either inconsistent or incorrect use.

Usually, methods are categorized into one of three effectiveness tiers based on pregnancy rates during typical use—highly effective, moderately effective, and low effectiveness methods (Trussell et al., 2018). Highly effective methods include the intrauterine device (IUD), implant, or male and female sterilization, do not rely on users' behaviors, and have the same pregnancy rates under perfect and typical use which are less than one in 100 women per year. Moderately effective methods include oral contraceptives, the injectable, the patch, and the ring and have pregnancy rates of four to seven in 100 women per year during typical use. Methods with low effectiveness include male and female condom, fertility awareness-based methods, diaphragm, sponge, withdrawal, and spermicides and have pregnancy rates of at least 13 per 100 women in one year of typical use. Thus, choice of method is associated with a woman's likelihood of becoming pregnant in the next year such that choice of more effective methods decreases the likelihood of becoming pregnant.

Only a few studies have focused on understanding whether depressive symptoms are associated with choice of more versus less effective contraceptive methods, and inconsistent results have appeared. One study found that screening positive for depression was associated with choosing no method versus any method among women seeking family planning

services (Garbers et al., 2010). Other studies, including one among women seeking abortion care, have found that having more depressive symptoms was associated with choosing more versus less effective methods (Francis et al., 2015; Steinberg et al., 2013).

From the existing literature, it appears that elevated depressive symptoms are not uniformly associated with choosing low effectiveness methods or with highly effective methods in reproductive health visits. One reason for this inconsistency may be because elevated depressive symptoms may mean something different just before an abortion compared to before a general reproductive health visit (Cozzarelli, 1993; Bradshaw & Slade, 2003; Hall & Steinberg, 2013; Major et al., 2000). Thus, the association of elevated depressive symptoms and effectiveness of contraceptive method may be moderated by whether the woman is seeking an abortion versus other reproductive health visit.

One way to better understand the nature of elevated depressive symptoms in different reproductive health settings is to take measures of both current and past depressive symptoms rather than just current, as research in this area typically does. Doing so permits knowing whether the woman's first time experiencing elevated depressive symptoms was at the time of her reproductive health visit or whether the elevated depressive symptoms were recurrent; and, if the woman's first experience of elevated depressive symptoms is just before her abortion, then the symptoms may be attributable to the situation or context and be short-lived (Steinberg et al., 2013). Such symptoms may be associated with choosing more effective methods as women may actively cope by choosing highly effective methods, which are most effective at preventing another unintended pregnancy (Steinberg et al., 2013). In contrast, having both elevated current and past depressive symptoms at a general reproductive health visit may be more indicative of clinical depression (American Psychiatric Association, 2013). Clinical depression decreases women's motivation and self-worth (Hall & Steinberg, 2018), which may leave her less concerned about preventing an unintended pregnancy; it also increases negative thoughts and attitudes (Hall & Steinberg, 2018), which may include her thoughts and attitudes on using contraception. All of these may lead her to choose low effective or no methods of contraception.

Understanding the nuances of the association between elevated depressive symptoms and effectiveness level of contraceptive method selected could inform providers on how to best counsel women wishing to prevent an unintended pregnancy. There may be more effective strategies to engage in during contraceptive counseling to help women prevent an unintended pregnancy based on the nature of the woman's depressive symptoms (situational vs. recurrent) and type of reproductive health visit. For instance, relative to a woman who is not experiencing clinical depression, for a woman who is experiencing clinical depression, it may be more important that contraceptive counseling present information on side-effects, which may be interpreted in a very negative light, sandwiched between two other positive aspects of using contraception.

Current Study

This study investigates the role of both *current* and *past* depressive symptoms in the effectiveness level of contraceptive method chosen among women receiving general reproductive health (e.g., contraceptive services, STI testing, Pap smear, etc.) and abortion

care services. Furthermore, we examine whether the association between current and past depressive symptoms on contraceptive effectiveness level chosen varies as a function of reproductive health visit (abortion care vs. general reproductive health).

Method

Sample

This study is a pre-specified sub-analysis of data from a cohort participating in a cluster randomized trial to increase access to long-acting reversible contraceptive methods (see Harper et al., 2015 for more information). Fifteen hundred women (649 abortion and 851 family planning patients) aged 18 to 25 years receiving contraceptive counseling and not desiring pregnancy in the next 12 months were recruited at 40 health centers across the United States and followed for one year. Data were collected between 2011 and 2013. Participants completed the baseline questionnaire and 1,262 of these (or 84%) completed the one-year follow-up questionnaire. This study was approved by the University of California, San Francisco's Committee on Human Research and the Allendale Investigational Review Board, Old Lyme, CT.

Measures

Effectiveness of contraceptive choice.—On a self-administered questionnaire at their reproductive health visit (at baseline), women were asked if they decided on a method of birth control that they were going to use. If yes, they reported which methods they were going to use, and options included: condoms, pills, patch (on the skin), vaginal ring, the shot (Depo-Provera), Copper IUD (ParaGard), Hormonal IUD (Mirena), Implant (Implanon), Emergency contraceptive pill, or other method (specify). Women could report more than one method they decided to use. The most effective contraceptive method chosen at baseline was classified into three categories according to pre-determined tiers based on pregnancy rates during typical use (Trussell et al., 2018). Those who reported that they had not decided were considered to have decided on no method. *Low effectiveness methods* included no method, abstinence, withdrawal, or natural family planning, emergency contraception, diaphragm, and condoms/barriers (pregnancy rate of typical users at least 13 per 100 women a year; Trussell et al., 2018). *Moderately effective methods* were included the oral contraceptive pill, transdermal patch, vaginal ring, and injectable (pregnancy rate of typical users between four and seven per 100 women a year; Trussell et al., 2018). *Highly effective methods* included sterilization, intrauterine devices, and the sub-dermal implant (pregnancy rate of typical users less than one per 100 women a year; Trussell et al., 2018).

Depressive symptoms.—Depressive symptoms were assessed with current and past depressive measures as described below. Also, as described below, from this a depression status variable was created that coded whether women experience current or past elevated depressive symptoms.

Current depressive symptoms. Depressive symptoms at baseline were assessed with the Center For Epidemiological Studies Depression 10 item version (CES-D 10; Andresen et al. 1994). For all women this was assessed after contraceptive counseling, and for women

seeking abortions it was assessed before their abortion. Women rated how often they experienced 10 symptoms in the past two weeks on a four-point scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often). In order to have a CESD score, women had to have answered at least seven of the 10 items. Values were summed to create a current depressive symptom score. Women who were at or above one standard deviation above the mean (CESD-10 sum score = 18.31 for 1,491 women not missing on the measure) on this sum were coded as experiencing current elevated depressive symptoms. While other research has used a value of 10 (Andresen et al., 1994), we used a higher value following precedence of other research (Steinberg et al., 2013) and because 43% of this sample included women just about to have an abortion, a time when we know women have elevated depressive symptoms (Cozzarelli, 1993; Major et al. 2000). Everyone else was coded as not experiencing current elevated depressive symptoms.

Past depressive symptoms.: At the 12-month follow-up interview, past depressive symptoms were assessed with the Primary Care Evaluation of Mental Health Disorders Brief Patient Health Questionnaire (PHQ-9) (Spitzer et al., 1999) and by asking women at what age they first experienced these symptoms. Women were asked to think about their life before the past two weeks and rated how often during a two-week period or more in the past they were bothered by the nine items on a four-point scale (0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day). Women also reported how old they were the first time they were bothered by these problems. To be coded as experiencing past elevated depressive symptoms, women had to score above a ten, the conventional cut-off (Kroenke et al., 2001) and report that the first age that they experienced these problems was before the age at the baseline assessment. If women scored below ten or the age of first experiencing these symptoms was at or after their age at baseline, women were coded as not having past elevated depressive symptoms. Forty-two women in the analytic sample had scores of ten or more and did not report their first age of experiencing these symptoms. They were coded as not having past elevated depressive symptoms in analyses, and in supplementary analyses were recoded as having experienced past elevated depressive symptoms and randomly assigned imputed values.

Depression status.: Using women's classification on the current and past depression measures, we created a depression status variable that was four categories: 1) never had elevated depressive symptoms, 2) has current elevated depressive symptoms only, 3) had past elevated depressive symptoms only, and 4) has both current and past elevated depressive symptoms.

Type of reproductive health visit.—Women were seeking abortion care services or a range of other general reproductive health care services (e.g., contraceptive services, testing for sexually transmitted infections, and Pap smears). To be eligible for the study, women had to receive contraceptive counseling. The vast majority of women, 76.7% of those seeking general reproductive health services, were specifically seeking contraceptive services. Similar to other research, women were categorized into receiving abortion services versus seeking other general reproductive health care (Harper et al., 2015).

Covariates.—We included study arm (intervention vs. control) in all models and also included the covariates of age, race/ethnicity, educational level completed, whether the person had a primary partner at baseline, happiness level about having a pregnancy in the next year (very happy and happy v. unhappy and very unhappy), number of prior abortions (0, 1, or multiple), number of children (0, 1 or multiple), and the highest contraceptive effectiveness level used in three months before baseline (low, moderately, or highly effective).

Analyses

We conducted multinomial logistic regression analyses with adjusted standard errors for clustered data. Our outcome was effectiveness level—low, moderate, or high—of contraceptive method chosen at women’s baseline visit. Our main predictor was our four-category depression status measure described above. Because we expected results to differ by whether the women were seeking general reproductive health or abortion care services, we tested the interaction between type of visit and our depression status measure. Depression status had four categories, so we entered three dummy codes for this measure, with the reference group being those who never had elevated depressive symptoms. To examine the interaction between depression status and reproductive health visit, each of the three dummy codes for depression status was multiplied by the dummy code for reproductive health care visit and all of three of these terms were entered to fully code the interaction.

We conducted two supplementary analyses because 42 women (in the sample analyzed here) who had experienced past elevated depressive symptoms did not report the age at which it first occurred. These included 1) recoding all 42 women as having past elevated depressive symptoms and 2) pooled results from five imputation analyses in which we randomly imputed whether each of these 42 women had elevated depressive symptoms before their entering the study. All supplementary analyses produced similar findings as those presented here and so are not discussed below (see Supplementary Analysis Document).

Results

Of the 1,500 women who were enrolled at baseline, 238 were lost to follow-up throughout the year and so did not have a measure for past depressive symptoms, which was assessed at the 12-month follow-up. Of the 238 women lost and the 1,262 not lost to follow-up, seven and two, respectively, were missing on current depressive symptoms assessed at baseline. When we compared these 231 lost versus the 1,260 not lost to follow-up on current depressive symptoms, we found that the percentage of women experiencing elevated current depressive symptoms was higher in those lost (25.5%) compared to those not lost (15.5%) to follow-up, $\chi^2 = 13.99$, $p < 0.0005$. Yet, there were no differences on contraceptive effectiveness level selected, $\chi^2 = 0.98$, $p = 0.61$. Of the 1,260 women who participated in the 12-month follow-up and were not missing on current depressive symptoms, 45 were missing on at least one other variable examined in these analyses (37 women were missing on one measure, seven were missing on two measures, and one was missing on three measures) and so analyses are limited to the 1,215 women not missing on any measures examined here. Of

the 1,215 women in our sample, 10.0% ($n = 122$) chose low effectiveness methods, 67.4% (819) chose moderately effective methods, and 22.6% ($n = 274$) chose highly effective methods (see Table 1 for specific methods chosen).

Table 2 presents the study variables by depression status. Thirty percent of the sample overall reported elevated depressive symptoms at some point: 10.7 % current elevated depressive symptoms only ($n=130$), 14.6 % past elevated depression only ($n=177$), and 4.9 % past and current elevated depressive symptoms ($n=60$). Women seeking abortion services were more likely to have current elevated depressive symptoms only or to have both past and current elevated depressive symptoms compared to women seeking contraceptive services, $p < .0005$.

Elevated depressive symptoms also varied by some covariates examined, including social-demographics, pregnancy history, past contraceptive use, and happiness level about pregnancy in next year (Table 2). White women were more likely to have both past and current severe depressive symptoms compared to Hispanic and Black women, $p < .0005$. Women who used low effectiveness methods in the last three months (versus women who used moderate effective methods) were more likely to have current severe depressive symptoms only or both past and current severe depressive symptoms, $p < .0005$. Women who had multiple prior abortions were more likely to have current or past severe depressive symptoms compared to women who had never had any abortions, $p < .01$. Women who reported they would be unhappy if pregnant in the next year were more likely to have past severe depressive symptoms only and both past and current severe depressive symptoms relative to women who reported they would be happy if pregnant in the next year, $p = .001$.

Interaction between Type of Reproductive Health Visit and Depression Status

In order to determine whether the effect of depression status on contraceptive effectiveness level chosen at the reproductive health visit varied by the type of visit (abortion care versus general reproductive health care), we first examined whether there was an overall interaction effect between depression status and type of visit; we found it was significant, $\chi^2(6) = 14.15$, $p < .03$. As can be seen in Table 3, when we examined individual coefficients of the interaction term, we found a significant interaction between having current and past elevated depressive symptoms (versus none) and type of reproductive health visit on choosing low versus moderately effective methods, Relative risk ratio (RRR) = 0.12 (also known as a multinomial odds ratio), 95% CI = 0.02 to 0.56, $p = .007$, indicating that the relationship between having current and past elevated depressive symptoms and choosing low versus moderately effective methods varied by reproductive health visit. As expected and seen in Table 4 among those seeking general reproductive health services, having current and past elevated depressive symptoms was associated with a higher likelihood of choosing low versus moderately effective methods, $RRR = 5.48$, 95% CI = 2.25 to 13.31, $p < .0005$, while among those seeking abortion services, there was no significant association between having current and past elevated depressive symptoms and choosing low versus moderately effective methods, $RRR = 0.64$, 95% CI = 0.19 to 2.19, $p = .482$.

We also found a marginally significant interaction between current elevated depressive symptoms and type of reproductive health visit (Table 3) on choosing high versus

moderately effective methods, $RRR = 8.25$, 95% $CI = 0.79$ to 85.75 , $p = .077$, indicating that the relationship between current elevated depressive symptoms and choosing high versus moderately effective methods tended to vary by reproductive health visit. As predicted (see Table 4), having current elevated depressive symptoms was associated with choosing highly versus moderately effective methods among those seeking an abortion $RRR = 1.74$, 95% $CI = 1.06$ to 2.86 , $p = .029$, while there was no association among those seeking general reproductive health services $RRR = 0.21$, 95% $CI = 0.02$ to 2.12 , $p = .187$. Past depressive symptoms were not associated with contraceptive method effectiveness level selected, nor did they interact with reproductive health visit type, $ps > .10$.

Discussion

For women seeking general reproductive health visits, having both current and past elevated depressive symptoms was associated with choosing low versus moderately effective methods, independent of whether the woman was receiving services at an intervention site or not and other possible confounds such as race/ethnicity, age, partner status, effectiveness level of most effective contraceptive method used three months before baseline, prior number of abortions, prior number of children, and happiness level if pregnant in the next year. Having both current and past elevated depressive symptoms may signify women are currently experiencing clinical depression, which may interfere with women's contraceptive choices by decreasing motivation or agency to use methods or make women have more negative attitudes or beliefs about contraception (Hall & Steinberg, 2018). Indeed, depression is likely to occur more than once in people's lives (American Psychiatric Association, 2013) and so having both current and past elevated depression may be more indicative of clinical depression than having only current elevated depressive symptoms. Drawing from the findings of this study and theories about depression, these findings have some clinical implications. For instance, relative to women who are not experiencing clinical depression, it may be more important for women experiencing clinical depression in a general reproductive health visit that contraceptive counseling present information on side-effects, which may be interpreted in a very negative light, sandwiched between two other positive aspects of using contraception.

Like Steinberg et al. (2013), we found that among women seeking abortion services, those who had elevated current depressive symptoms were more likely to choose more effective methods controlling for the same aforementioned covariates; this pattern may be due to the situational nature of distress just before an abortion. Indeed, other research has shown that women's depressive symptoms are higher just before an abortion compared to one-hour later (Cozzarelli, 1993; Major et al., 2000). These situational elevated depressive symptoms may lead women to cope with the situation of having an abortion from an unintended pregnancy more actively by choosing more effective methods that prevent future unintended pregnancies (Steinberg et al., 2013).

Limitations

There are some limitations worth mentioning. First, the measure of past depressive symptom was assessed at the 12-month follow-up interview, a year after current depressive symptoms

was assessed. Future research would benefit from assessing past depressive symptoms in a prospective manner before women attend a reproductive health visit to better understand whether the situational versus recurrent nature of elevated depressive symptoms differentially influences contraceptive choices. Second, we examined the outcome of contraceptive method choice, which is not necessarily the method the woman went home with or started using. We were interested in what women's contraceptive choices would be should they not have cost concerns (as the method a woman uses or initiates does).

Third, we found that women lost by the 12-month follow-up (when history of depressive symptoms was assessed) were more likely to have current elevated depressive symptoms than women not lost to follow-up, supporting other prospective research (Westhoff et al., 1998). Because we did not find that effectiveness level of contraceptive method chosen at baseline was associated with whether women were lost to follow-up, the association between depressive symptoms and effectiveness level chosen may not have been affected by this differential attrition.

Finally, we do not know why we found the associations we did. Future research should examine why women with higher depressive symptoms pre-abortion choose highly effective methods and why women seeking other reproductive health services with elevated past and current depressive symptoms choose low effective methods. It may be that women seeking abortions who are experiencing current elevated depressive symptoms for the first time, as those in this study were, are experiencing transient situational distress. This distress may lead to active coping with the situation by choosing highly effective methods in order to be most protected from having another unintended pregnancy. Women seeking other reproductive services who have elevated current and past depressive symptoms may be more likely to be experiencing a depressive episode. Such an episode may lead to less motivation and desire to protect oneself from an unintended pregnancy, less desire to use hormonal contraception, a more negative cognitive framework about contraception, or less effective or positive patient-provider interactions, all of which may lead women to choose low effective, non-hormonal methods (e.g., condoms). Alternatively, it is possible that findings may be due to common factors that are associated with having elevated depressive symptoms and preferences for different effectiveness level methods in different reproductive health contexts.

These findings show that elevated depressive symptoms are not uniquely associated with effectiveness level of contraceptive method chosen, suggesting providers should not make assumptions about the contraceptive preferences of women with elevated depressive symptoms. Furthermore, there may be more effective strategies to engage in during contraceptive counseling to best help women prevent an unintended pregnancy based on the nature of the woman's depressive symptoms (situational vs. recurrent) and type of visit she is seeking.

Conclusions

This study demonstrates that when elevated depressive symptoms occurred (at the time of the reproductive health visit or before it) and in what context they occurred (abortion care

visit or general reproductive health visit) interacted to relate to contraceptive effectiveness level selected. Clinical practice and future research should not just assess current depressive symptoms but also assess women's history of mental health. Doing so can help better understand contraceptive and reproductive behaviors.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

Elevated depressive symptoms predicted contraceptive effectiveness method chosen.

Current depressive symptoms predicted choosing highly effective methods.

Current and past depressive symptoms predicted choosing low effective methods.

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Table 1.Contraceptive Choices at the Reproductive Health Visit ($n = 1,215$).

| | Percentage (<i>N</i>) |
|---------------------------------------|-------------------------|
| Low effective methods | 10.00 (122) |
| None | 6.83 (83) |
| Withdrawal, abstinence, Rhythm method | 0.16 (2) |
| EC | 0.08 (1) |
| Diaphragm | 0.08 (1) |
| Condoms | 2.88 (35) |
| Moderately effective methods | 67.41 (819) |
| Pill | 44.12 (536) |
| Patch | 3.95 (48) |
| Ring | 8.89 (108) |
| Shot | 10.45 (127) |
| Highly effective methods | 22.55 (274) |
| IUD | 15.31 (186) |
| Sterilization | 0.16 (2) |
| Implant | 7.08 (86) |

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Table 2.

Study Covariates by Depression Status (% within column).

| Characteristic | Total (n=1,215) | No depression history (n = 848) | Current severe depressive symptoms only (n = 130) | Past severe depressive symptoms only (n = 177) | Past & current severe depressive symptoms (n = 60) |
|---|--------------------|------------------------------------|--|---|---|
| Arm | | <i>p</i> = .330 | | | |
| Intervention | 54.2 | 53.1 | 52.3 | 60.5 | 55.0 |
| Control | 45.8 | 46.9 | 47.7 | 39.6 | 45.0 |
| Visit type | | <i>p</i> < .0005 | | | |
| General reproductive health | 60.3 | 68.5 | 13.9 | 66.7 | 26.7 |
| Abortion | 39.7 | 31.5 | 86.2 | 33.3 | 73.3 |
| Race | | <i>p</i> < .0005 | | | |
| White | 49.9 | 46.6 | 49.2 | 60.5 | 66.7 |
| Hispanic | 26.7 | 30.1 | 22.3 | 17.5 | 15.0 |
| Black | 15.0 | 15.8 | 18.5 | 10.7 | 8.3 |
| Asian/Other | 8.5 | 7.6 | 10.0 | 11.3 | 10.0 |
| Primary partner | | <i>p</i> < .0005 | | | |
| Yes | 81.7 | 84.6 | 80.0 | 75.7 | 63.3 |
| No | 18.3 | 15.5 | 20.0 | 24.3 | 36.7 |
| Effectiveness level of most effective contraceptive method used in three months before baseline | | <i>p</i> < .0005 | | | |
| Low | | | | | |
| Moderate | 47.1 | 44.3 | 66.2 | 39.6 | 66.7 |
| High | 48.5 | 50.7 | 30.8 | 57.1 | 30.0 |
| Prior abortions | | <i>p</i> = .003 | | | |
| 0 | 74.3 | 76.4 | 67.7 | 73.5 | 61.7 |
| 1 | 18.0 | 17.8 | 17.7 | 16.4 | 26.7 |
| Multiple | 7.7 | 5.8 | 14.6 | 10.2 | 11.7 |
| Number of children | | <i>p</i> = .025 | | | |
| 0 | 72.2 | 70.8 | 68.5 | 80.8 | 75.0 |
| 1 | 17.9 | 19.5 | 15.4 | 11.9 | 18.3 |

| Characteristic | Total (<i>n</i> = 1,215) | No depression history (<i>n</i> = 848) | Current severe depressive symptoms only (<i>n</i> = 130) | Past severe depressive symptoms only (<i>n</i> = 177) | Past & current severe depressive symptoms (<i>n</i> = 60) |
|--------------------------------|------------------------------|--|--|---|---|
| Multiple | 10.0 | 9.8 | 16.2 | 7.3 | 6.7 |
| Happy if pregnant in next year | | <i>p</i> = .001 | | | |
| Happy or very happy | 19.5 | | 16.9 | | |
| Unhappy or very unhappy | 80.5 | 22.3 | 83.1 | 11.3 | 10.0 |
| Age (mean, <i>SD</i>) | 21.5 (2.2) | 21.5 (2.2) | 21.4 (2.2) | 21.7 (2.1) | 22.1 (2.1) |

Note. Depression status did not relate significantly to age, *p* = .12.

Interaction terms of depression status and reproductive visit type predicting contraceptive effectiveness level choice^a (*n* = 1215).

Table 3.

| Predictor | Low vs. moderate RRR (95% CI) | High vs. moderate RRR (95% CI) |
|---|----------------------------------|-----------------------------------|
| Reproductive visit | | |
| General Reproductive Health | 1.00 | 1.00 |
| Abortion | 1.87 [†] (0.99, 3.54) | 1.54* (1.03, 2.31) |
| Depression status | | |
| None | 1.00 | 1.00 |
| Current only | 2.41 (0.43, 13.42) | 0.21 (0.02, 2.12) |
| Past only | 1.07 (0.38, 3.00) | 1.19 (0.69, 2.06) |
| Past and current | 5.48*** (2.25, 13.31) | 1.38 (0.31, 6.17) |
| Interaction of depression status and reproductive visit type | | |
| No reproductive visit | | |
| Current reproductive visit | 1.00 | 1.00 |
| Past reproductive visit | 0.50 (0.08, 3.11) | 8.25 [†] (0.79, 85.75) |
| Past and current reproductive visit | 1.95 (0.49, 7.69) | 1.07 (0.44, 2.58) |
| | 0.12** (0.02, 0.56) | 1.16 (0.20, 6.72) |

Note. Model is adjusted for intervention effect, age, race/ethnicity, primary partner, effectiveness level of most effective contraceptive method used in the three months before baseline, prior number of abortions, number of children, and happiness level if pregnant in next year.

^a = reference is moderately effective methods

RRR = relative risk ratio (also known as a multinomial odds ratio).

[†] *p* < .10

* *p* < .05

** *p* < .01

*** *p* < .0005.

Table 4.

Predicting contraceptive effectiveness level choice by depression status for the abortion vs. family planning group.

| Depression Status | Low vs. moderate <i>RRR</i> (95% <i>CI</i>) | | High vs. moderate <i>RRR</i> (95% <i>CI</i>) | |
|-------------------------|---|-----------------------------|--|-----------------------------|
| | Abortion | General reproductive health | Abortion | General reproductive health |
| Never | 1.00 | 1.00 | 1.00 | 1.00 |
| Current severe only | 1.20 (0.69, 2.11) | 2.41 (0.43, 13.42) | 1.74* (1.06, 2.86) | 0.21 (0.02, 2.12) |
| Past severe only | 2.09 (0.86, 5.09) | 1.07 (0.38, 3.00) | 1.27 (0.64, -2.53) | 1.19 (0.69, 2.06) |
| Current and Past severe | 0.64 (0.19, 2.19) | 5.48*** (2.25, 13.31) | 1.60 (0.66, 3.83) | 1.38 (0.31, 6.17) |

Note. Model is adjusted for intervention effect, age, race/ethnicity, primary partner, effectiveness level of most effective contraceptive method used in the three months before baseline, prior number of abortions, number of children, and happiness level if pregnant in next year.

RRR = relative risk ratio (also known as a multinomial odds ratio).

† $p < .10$

* $p < .05$

** $p < .01$

*** $p < .0005$.