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High Self-Efficacy Is Associated with Prescription Contraceptive Use

Odessa P. Hamidi, MD[a,*], **Timothy Deimling, MD, MSc**[b], **Erik Lehman, MSc**[a,c], **Carol Weisman, PhD**[a,c], and **Cynthia Chuang, MD, MSc**[d,e]

[a]Department of Obstetrics and Gynecology, Pennsylvania State Hershey Medical Center, Hershey, Pennsylvania

[b]Department of Obstetrics and Gynecology, Division of Minimally Invasive GYN Surgery, Pennsylvania State Hershey Medical Center, Hershey, Pennsylvania

[c]Department of Public Health Sciences, Pennsylvania State University College of Medicine, Hershey, Pennsylvania

[d]Department of Medicine, Pennsylvania State University College of Medicine, Hershey, Pennsylvania

[e]Department Public Health Sciences, Pennsylvania State University College of Medicine, Hershey, Pennsylvania

Abstract

Objectives: In the United States, 45% of pregnancies continue to be unintended. Although many previous studies have focused on external barriers to contraceptive use such as cost or access, fewer studies have evaluated internal barriers such as individual characteristics. We hypothesize that high self-efficacy for contraception will be associated with use of more effective contraceptive methods.

Study Design: The analytic sample is 861 privately insured Pennsylvania women aged 18 to 40 years not intending pregnancy for 12 months at enrollment. Contraceptive self-efficacy (high vs. low) was measured using an eight-item scale. The association of self-efficacy with prescription contraceptive use was determined using multivariable logistic regression adjusting for future pregnancy intention, history of unintended pregnancy, number of live births, non-White race, frequency of sexual intercourse, marital status, and age group.

[*]Correspondence to: Odessa P. Hamidi, MD, PGY3 at Penn State Hershey Medical Center, 73 W. Areba Ave, Hershey, PA 17033. Phone: 214-934-3069; fax: 717-531-0197. ohamidi@pennstatehealth.psu.edu, ohamidi@gmail.com (O.P. Hamidi).

Author Descriptions

Odessa P. Hamidi, MD, is a resident in Obstetrics and Gynecology at Penn State Hershey Medical Center. Her research interests focus on contraception and improving pregnancy outcomes.

Timothy Deimling, MD, MSc, is a Professor of Obstetrics and Gynecology in the division of Minimally Invasive Gynecologic Surgery at Penn State Hershey Medical Center. He is involved in multiple research projects with specific expertise regarding endometriosis.

Erik Lehman, MSc, is a biostatistician with the department of Public Health Sciences at the Penn State Hershey Medical Center. His interests include a wide variety of medical studies, working with local and national investigators.

Carol Weisman, PhD, is Distinguished Professor of Public Health Sciences and Obstetrics and Gynecology. She is a sociologist and health services researcher focusing on women's health care and policy.

Cynthia Chuang, MD. MSc, is Professor of Medicine and Public Health Sciences at the Penn State College of Medicine. She is a general internist and health services researcher focused on reproductive health.

The authors report no conflict of interest.

Results: Prescription contraceptive use was higher among those with high self-efficacy (adjusted odds ratio, 1.75; 95% confidence interval, 1.29–2.37).

Conclusions: Women with high self-efficacy for contraception had an increased use of prescription contraceptive methods compared with nonprescription methods. Strategies for encouraging effective contraceptive choices in women with low contraceptive self-efficacy should be further studied.

In the United States, 45% of pregnancies are unintended, and nearly all unintended pregnancies occur in women who do not use contraception or use it inconsistently (Finer & Zolna, 2016). Addressing this public health issue requires attention to a multitude of factors. Some of the various barriers to contraceptive use include cost, access to health care, and sociodemo-graphic factors such as socioeconomic status (Mosher, Jones, & Abma, 2012; Secura, Allsworth, Madden, Mullersman, & Peipert, 2010; Trussell, 2011). Other important factors include attitudes and beliefs about contraception that are potentially amenable to intervention to improve contraceptive use.

The health belief model is a conceptual framework that elucidates the multiple factors that influence a person's health-related behaviors. Key to this framework is the concept of self-efficacy, which is defined as an individual's belief in one's own capacity to achieve control over one's behavior (Rosenstock, Strecher, & Becker, 1988). As applied to specific health behaviors, self-efficacy is viewed as modifiable based on experiences and behavior change interventions. Studies have correlated self-efficacy with specific health-related behaviors, such as chronic disease management, smoking cessation, diet, and exercise (Bello, Lapin, Poston, Hirshfeld, & Hosack, 2016; Hagger et al., 2016; Nezami et al., 2016; Zullig et al., 2016). Studies have also demonstrated that interventions can be effective in modifying self-efficacy for specific health-related behaviors and in improving those health behaviors (Burke et al., 2015; Sheeran et al., 2016).

We posit that self-efficacy for contraceptive use may predict contraceptive behaviors. Like chronic disease management, using a prescription contraceptive method requires a woman to execute a series of actions, including identifying a health care provider, attending health care visits, communicating with the provider, obtaining and filling prescriptions, and/or visits for refills/injections or placement of a contraceptive device. A woman's belief in her own competence to carry out these behaviors may be a key determinant of effective contraceptive use.

To our knowledge, previous self-efficacy studies related to contraception have primarily focused on condom use in persons infected with the human immunodeficiency virus (Adih & Alexander, 1999; Do & Fu, 2011; Oppong Asante, Osafo, & Doku, 2016). These studies show that high self-efficacy for condom use is associated with more consistent condom use, and the same may apply to use of prescription methods of contraception. In this study, we hypothesize that high self-efficacy for contraception will be associated with use of more effective contraceptive methods.

Methods

Study Design and Sample

Data are from 861 women who participated in the MyNewOptions study baseline survey in 2014 and reported current use of any form of birth control (prescription or nonprescription) at baseline. The parent study was a randomized controlled trial of 984 women conducted between 2014 and 2016 to evaluate the impact of web-based reproductive life planning interventions to assist privately insured adult women with patient-centered contraceptive decision making (ClinicalTrials.gov Identifier: NCT02100124) (Chuang et al., 2015).

The sample was selected from Highmark Health enrollees and included women aged 18 to 40 years, residing in Pennsylvania, not covered by an employer group with a religious exception to contraceptive coverage, and no previous claim for a tubal ligation, hysterectomy, or infertility-related service. Women were screened for eligibility and consented online. Women were eligible if they were currently sexually active or planning to be with a male partner within the next 6 months, not intending pregnancy in the next 12 months, not surgically sterile (i.e., tubal ligation or hysterectomy) or with a current partner with vasectomy, had Internet access, and able to read and write English. Further details regarding sampling and participant recruitment have been published elsewhere (Chuang et al., 2015).

The MyNewOptions study was approved by the Pennsylvania State College of Medicine's Institutional Review Board under protocol 44583EP. The MyNewOptions surveys were distributed through Research Electronic Data Capture (Harris et al., 2009). The baseline survey included participant demographics and characteristics, pregnancy intentions, and contraceptive use history.

Measures: Dependent Variable

The primary outcome measure was use of prescription versus nonprescription contraceptive methods. The survey assessed current use of a full range of contraceptives, including prescription and over-the-counter methods, as well as natural family planning and withdrawal. Prescription methods included methods that require a prescription, procedure for device insertion, or health care visit (i.e., intrauterine device, contraceptive implant, birth control pills, injectables, contraceptive patch, diaphragm, cap and contraceptive vaginal ring). The nonprescription methods included condoms, spermicide, sponge, natural family planning, and withdrawal.

Measures: Independent Variable

The independent variable is contraceptive self-efficacy. The novel contraceptive self-efficacy scale was developed by the MyNewOptions investigators to assess the respondent's belief that one's actions are directly responsible for successfully using contraception. The items were adapted in part from a validated scale to measure contraceptive self-efficacy in adolescents (Levinson, 1995; Levinson, Wan, & Beamer, 1998). A set of 9 items was pilot tested in a convenience sample of reproductive age women ($n = 30$) to determine readability,

content validity, and reliability. The final eight-item scale was determined based on acceptable internal consistency within the pilot sample (Cronbach's alpha 0.71).

The final eight items in the contraceptive self-efficacy measure were: 1) I am confident in my ability to prevent accidentally getting pregnant; 2) I am confident in my ability to use birth control correctly; 3) I am confident I have the ability to start a new birth control method, if it is necessary; 4) I am confident in my ability to use a birth control method when I am traveling away from home; 5) I am embarrassed to talk about birth control with my doctor or health care provider; 6) I am embarrassed to buy condoms at the store; 7) It is easy for me to speak openly with my partner about birth control; and 8) If my partner and I were about to have sex, and I was not using a birth control method at the time, I would feel comfortable asking him to use a condom. Each item had a 5-point response set (strongly agree, agree, neither agree or disagree, disagree, or strongly disagree) coded so higher scores indicate higher contraceptive self-efficacy (possible range of 5–40). The range of scores in our sample was 15 to 40, with a mean and median score of 34. The interquartile range for the sample was 31 to 37. For analysis, scale scores were dichotomized at the sample median to represent women with higher and lower contraceptive self-efficacy.

Measures of Covariates

Other variables known or hypothesized to be associated with contraceptive method use and/or self-efficacy were considered as covariates. Pregnancy-related variables included intentions for future pregnancy (intending pregnancy in the next 1–2 years, 2–5 years, ≥5 years, never, or not sure), parity, and any history of unintended pregnancy or abortion (yes/no). Relationship variables included cohabitating status and frequency of sex. Cohabitating included those who were married or living with a partner, and other included not partnered and dating. This variable was collapsed owing to collinearity with the other predictors included that caused issues with the final multivariable regression model. Previous literature has demonstrated an increased use of prescription contraception among those wishing to avoid pregnancy, a history of unintended pregnancy, having a partner, or increased frequency of intercourse (Weisman, Lehman, Legro, Velott, & Chuang, 2015).

Sociodemographic variables included age group (18–25, 26–33, 34–40 years), education (college graduate vs. less than college graduate), employment, race/ethnicity, and annual household income. It has been shown in multiple studies that factors associated with low socioeconomic status as well as younger age decrease the likelihood of using prescription contraception (Coombe, Harris, & Loxton, 2017; Secura et al., 2010).

Statistical Analysis

Variable frequencies are presented. χ^2 tests were performed testing the association between contraceptive self-efficacy (high vs. low) and prescription contraceptive use and between contraceptive self-efficacy or prescription use and other potential covariates. The association of contraceptive self-efficacy with prescription contraceptive use was evaluated using multivariable logistic regression, adjusting for covariates that may have an association with prescription contraceptive use ($p < .05$ in bivariate comparisons). Before multivariable analysis, the independent variables were checked for multicollinearity using variance

inflation factor statistics. The fit of the final model was assessed via Pearson and Deviance goodness-of-fit statistics as well as the Hosmer and Lemeshow goodness-of-fit test ($p = .28$). Odds ratios with 95% confidence intervals were used to quantify the magnitude and direction of any significant associations. All analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC).

Results

Table 1 presents the univariate statistics for the study variables. The majority of the sample (65.5%) was using prescription contraceptive methods. The majority of the patients was also White (95.1%), college educated (62.1%), and between the ages of 18 and 25 (45.1%) or 26 and 33 (37.4%). Future pregnancy intention was fairly well-distributed. The majority of patients had no history of unintended pregnancy or abortion (82.0%) and were nulliparous (67.9%). The covariates that were associated with the outcome with a significance level of $p < .05$ are also included in Table 1. The statistically significant bivariate associations included future pregnancy intention, history of unintended pregnancy, number of live births, non-White race, frequency of sexual intercourse, marital status, and age group.

Table 2 shows the bivariate association of contraceptive self-efficacy with prescription contraceptive methods, future pregnancy intention, history of unintended pregnancy or abortion, number of live births, non-White race, frequency of sexual intercourse, marital status, and age group. Overall, the low and high contraceptive self-efficacy groups had similar distributions of examined covariates other than prescription contraceptive use versus noncontraceptive use and frequency of having sex. Women with high self-efficacy were more likely to be using prescription methods than those with low self-efficacy (72.5% vs. 57.5%; $p < .001$). Women with high versus low contraceptive self-efficacy were more likely to be having sex two or more times per week (38% vs. 27.1%, respectively), and less likely to be having sex two to four times per month (46.9% vs. 50.5%) or monthly or less (15.1% vs. 22.4%; $p = .001$).

Table 3 shows the results of the multivariable logistic regression analysis modeling the association of contraceptive self-efficacy and use of prescription contraception, controlling for covariates with significant bivariate associations. Women with high contraceptive self-efficacy were more likely to use prescription methods when adjusting for covariates (adjusted odds ratio, 1.75; 95% confidence interval, 1.29–2.37). The remaining covariates analyzed in the multivariable logistic regression did not reach statistical significance.

Discussion

As noted in previous studies, approximately one-half of unintended pregnancies occur owing to a lack contraceptive use, and another one-half are due to contraception being used inconsistently or incorrectly (Frost, 2011). Barriers and predictors of contraceptive practices are an area of ongoing research. Although many studies have been published to elucidate the multitude of factors involved such as cost, access, and socio-demographic factors, the use of less effective contraception or inconsistent use is seen across all groups of women (Frost, 2011), suggesting that other individual factors are contributing to contraceptive behavior and

decision making in women in across all of these groups. In this study, we report that women with greater contraceptive self-efficacy are more likely to be using prescription methods of contraception.

Few studies have examined the relationship of a woman's motivations or belief systems in their ability to avoid pregnancy. A previous study that discusses this factor was that by Reed et al. (2014) that examined qualitative interviews of young women on college campuses. This study examined various factors including efficacy or an individual's ability to undertake behaviors necessary for consistent contraception, including the organization and discipline to carry out the routines necessary for obtaining and using contraceptives and suggested that efficacy increases a woman's likelihood to use more efficacious contraception.

Another key study that examined the role of a woman's behavioral characteristics was that by Bello et al. (2016). This study examined 112 participants and measured their activation level through the survey-based patient activation model. This study found that women with higher activation scores were more confident that they could avoid pregnancy and that this group had a higher uptake of using a moderately or highly effective contraceptive method. Those methods they described as moderately or highly effective included all forms of prescription methods as examined in our present study with relation to self-efficacy.

Self-efficacy as a specific construct has rarely been investigated with regard to contraceptive use. This new study contributes to the literature by showing that women with higher contraceptive self-efficacy are more likely to use prescription methods of contraception, with statistically significant results and a large sample size. Self-efficacy is linkable to contraceptive use in that it requires complex behaviors to maintain consistent contraception including seeking a health care provider, filling and renewing prescriptions before supplies run out (i.e., contraceptive pills, patches, rings), remembering to take pills daily, or getting injectables or implants.

Limitations of this study include its cross-sectional design, which does not allow us to determine whether self-efficacy caused the choice of a prescription method or whether use of a prescription method increased contraceptive self-efficacy. In addition, the study sample included only privately insured women in Pennsylvania who were largely White and well-educated; therefore, these results cannot be generalized to other insured populations or to women without health insurance. Last, the contraceptive self-efficacy questions were not asked of the survey participants who were not currently using a contraceptive method, which may have resulted in an underestimation of the impact of self-efficacy on prescription method use.

Implications for Practice and/or Policy

Women who have higher self-efficacy are likely more involved in their contraceptive decision making and choose prescription methods. Strategies for encouraging effective contraceptive choices in women with low contraceptive self-efficacy should be studied further. Previous studies have shown that self-efficacy can be modified and that a patient's engagement in health behaviors can be increased using approaches such as web-based

interventions or in-person counseling sessions (Sheeran et al., 2016). Whether providers could focus on ways to increase a woman's empowerment and confidence in their ability to determine their own outcomes as part of their contraceptive counseling could be investigated, perhaps using motivational interviewing (Burke et al., 2015). The finding that self-efficacy for contraception may affect a woman's likelihood of choosing a prescription method encourages us to consider counseling approaches that empower patients to make well-informed and self-motivated contraceptive choices.

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Table 1

Characteristics of Reproductive Age Women Using Contraception ($N = 861$)

Characteristic	*n* (%)	Unadjusted Association With Prescription Contraceptive Use, *n* (Row %)	*p* Value
Contraceptive method			
Prescription	564 (65.5)		
Nonprescription	297 (34.5)		
Contraceptive Self-efficacy			
High	461 (53.5)	334 (72.5)	
Low	400 (46.5)	230 (57.5)	<.0001
Age group (y)			
18–25	388 (45.1)	280 (72.2)	
26–33	322 (37.4)	201 (62.4)	
34–40	151 (17.5)	83 (55)	<.0003
Education			
College graduate	532 (62.1)	354 (66.5)	
Less than college graduate	325 (37.9)	208 (64)	.45
Future pregnancy intention			.005
1–2 years	112 (13.0)	61 (54.5)	
2–5 years	224 (26.1)	156 (69.6)	
≥5 years	192 (22.3)	140 (72.9)	
Never	137 (15.9)	89 (65)	
Not sure	195 (22.7)	117 (60)	
Ever had an unintended pregnancy or abortion			.004
Yes	155 (18.0)	86 (55.5)	
No	705 (82.0)	477 (67.7)	
Number of live births			<.0001
0	584 (67.9)	428 (73.3)	
1	124 (14.4)	58 (46.8)	
≥2	152 (17.7)	77 (50.7)	
Employment			.08
Unemployed	230 (26.8)	140 (60.9)	
Employed	629 (73.2)	423 (67.3)	
Race			.006
White	814(95.1)	542 (66.6)	
Other	42 (4.9)	19 (45.2)	
Annual household income (U.S.$)			.844
>75,000	309 (36.8)	199 (64.4)	
50,000–75,000	213 (25.4)	139 (65.3)	
25,000–50,000	204 (24.3)	135 (66.2)	
<25,000	113 (13.5)	78 (69)	
Frequency of sex			.0103
≥2 times per week	282 (32.9)	201 (71.3)	

Characteristic	*n* (%)	Unadjusted Association With Prescription Contraceptive Use, *n* (Row %)	*p* Value
2–4 times per month	416 (48.6)	252 (60.6)	
Monthly or less	158 (18.5)	108 (68.4)	
Relationship status			<.0001
Cohabitating (married or living with partner)	480 (55.8)	284 (59.2)	
Other (partnered or not partnered)	380 (44.2)	279 (73.4)	

Table 2

Unadjusted Associations Between Contraceptive Self-Efficacy and All Other Variables

	Low Self-Efficacy, *n* (%)	High Self-Efficacy, *n* (%)	*p* Value
Contraceptive method			<.001
Prescription	230 (57.5)	334 (72.5)	
Nonprescription	170 (42.5)	127 (27.6)	
Pregnancy intention			.133
1–2 years	57 (14.2)	55 (12.0)	
2–5 years	101 (25.2)	123 (26.7)	
≥5 years	95 (23.8)	97 (21.1)	
Never	51 (12.8)	86(18.7)	
Not sure	96 (24.0)	99 (21.5)	
Ever had an unintended pregnancy or abortion			.293
Yes	78 (19.5)	77 (16.7)	
No	322 (80.5)	383 (83.3)	
Number of live births			.034
0	260 (65)	324 (70.4)	
1	71 (17.8)	53 (11.5)	
≥2	69(17.3)	83 (18)	
Race			.641
White	377 (94.7)	437 (95.4)	
Other	21 (5.3)	21 (4.6)	
Frequency of sex			.001
≥2 times per week	108 (27.1)	174 (38)	
2–4 times per month	201 (50.5)	215 (46.9)	
Monthly or less	89 (22.4)	60(15.1)	
Age group (y)			.914
18–25	181 (45.3)	207 (44.9)	
26–33	147 (36.8)	175 (38)	
34–40	72 (18)	79(17.1)	
Relationship status			.756
Cohabitating (married or l iving with partner)	221 (55.3)	259 (56.3)	
Other (partnered or not partnered)	179 (44.8)	201 (43.7)	

Note: *p* Values from χ^2 tests.

Table 3

Multivariable Analysis Modeling Prescription Contraceptive Use ($N = 855$)

	Adjusted OR (95% CI)
Contraceptive self-efficacy	
High	1.75 (1.29–2.37)
Low	Reference
Pregnancy intention	
1–2 years	0.73 (0.43–1.25)
2–5 years	1.06 (0.67–1.68)
≥5 years	0.95 (0.55–1.64)
Never	1.49 (0.90–2.47)
Not sure	Reference
Ever had an unintended pregnancy or abortion	
Yes	1.12 (0.72–1.75)
No	Reference
Number of live births	
1	0.39 (0.24–0.64)
≥2	0.39 (0.22–0.67)
0	Reference
Race	
Other	0.33 (0.17–0.64)
White	Reference
Frequency of sex	
≥2 times per week	1.07 (0.68–1.69)
2–4 times per month	0.77 (0.50–1.18)
Monthly or less	Reference
Age group (y)	
26–33	1.14 (0.74–1.76)
34–40	0.83 (0.46–1.48)
18–25	Reference
Relationship status	
Cohabitating (married or living with partner)	0.72 (0.49–1.06)
Other (partnered or not partnered)	Reference

Note: Odds ratios from multivariable logistic regression model adjusted for covariates