Title

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Journal

Contraception, 96(1)

ISSN

0010-7824

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Publication Date

2017-03-01

DOI

10.1016/j.contraception.2017.03.008

Peer reviewed

Published in final edited form as:
Contraception. 2017 July ; 96(1): 54–61. doi:10.1016/j.contraception.2017.03.008.

Racial and Ethnic Disparities in Contraceptive Knowledge among Women Veterans in the ECUUN Study

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Abstract

Objective—To assess whether racial/ethnic disparities in contraceptive knowledge observed in the general US population are also seen among women Veterans served by the Veterans Affairs (VA) healthcare system.

Study Design—We analyzed data from a national telephone survey of 2,302 women Veterans aged 18–44 who had received care within VA in the prior 12 months. Twenty survey items assessed women's knowledge about various contraceptive methods. Multivariable logistic regression was used to examine racial/ethnic variation in contraceptive knowledge items, adjusting for age, marital status, education, income, parity, and branch of military service.

Results—Contraceptive knowledge was low among all participants, but Black and Hispanic women had lower knowledge scores than Whites in almost all knowledge domains. Compared to White women, Black women were significantly less likely to answer correctly 15 of the 20 knowledge items, with the greatest adjusted difference observed in the item assessing knowledge about the reversibility of tubal sterilization (adjusted percentage point difference (PPD): −23.0;

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Conflicts of interest: None

95% CI: −27.8, −18.3). Compared to White women, Hispanic women were significantly less likely to answer correctly 11 of the 20 knowledge items, with the greatest adjusted difference also in the item assessing tubal sterilization reversibility (PPD: −13.1; 95% CI: −19.5, −6.6).

Conclusion—Contraceptive knowledge among women Veterans served by VA is suboptimal, especially among racial/ethnic minority women. Improving women's knowledge about important aspects of available contraceptive methods may help women better select and effectively use contraception.

Keywords

VA; family planning; race; contraception; unintended pregnancy

1. Introduction

Contraceptive care is a growing priority for the Veteran Affairs (VA) healthcare system as the number of women Veterans has increased substantially over the past two decades and is projected to continue increasing in the future [1]. Over 40% of women Veterans are between the ages of 18 to 44, and over 45% of these women are racial and ethnic minorities [1]. VA is committed to providing comprehensive and equitable health care to all Veterans, including ensuring high-quality reproductive health care for the growing number of young and racially-diverse women [2, 3].

Racial/ethnic differences in contraceptive use have been observed in the general US population. Compared to White women, women of color are less likely to use contraception overall, less likely to use hormonal methods, and more likely to rely on less effective methods, such as condoms, as their main method of contraception. [4–10]. Black and Hispanic women also have higher contraceptive method discontinuation and higher failure rates [9, 11–13], suggesting less satisfaction with and less correct use of contraceptive methods. Knowledge about contraception is an important determinant of both contraceptive method choice and correct use of the method [11, 14]. Recent research has documented that Black and Hispanic women have lower awareness of the full range of available contraceptive methods and also have lower levels of knowledge about the safety and efficacy of hormonal contraception compared to White women [15–19]. Thus, racial/ethnic disparities in contraceptive knowledge may play an important role in differential contraceptive use patterns [17, 20].

Identifying and addressing contraceptive knowledge deficits and disparities among women is an important means to ensure high-quality reproductive health care. As patients who utilize VA typically have relatively uniform education and economic characteristics [1], it is unclear whether racial/ethnic disparities in contraceptive knowledge observed in the general US population will also be seen among women VA-users, as there is no prior research on contraceptive knowledge in this population. Thus, we analyzed data from the study, "Examining Contraceptive Use and Unmet Need among Women Veterans" (ECUUN), to assess racial/ethnic differences in contraceptive knowledge among women Veterans.

2. Materials and Methods

2.1 Study design and sample

ECUUN included a national survey of women VA-users to assess women's contraceptive use, pregnancy history, and experiences with VA reproductive healthcare. A random sample of women Veterans aged 18–44 across all US regions and Veterans Integrated Service Networks (VISNs) who had used VA for primary care in the past 12 months were mailed study packets that included an invitation letter, a study brochure, and a postage-paid reply card. Women were asked to express interest in or opt out of the study via a toll-free study telephone number or reply card. All women who did not opt out were subsequently called to determine interest in participating, undergo eligibility screening, and provide verbal informed consent. Interviews were conducted from April 2014 through January 2016 by trained interviewers using computer-assisted telephone interview (CATI) technology. Interviews lasted an average of 45 minutes, and participants received a $30 honorarium. The University of Pittsburgh and the VA Pittsburgh Institutional Review Boards approved this study.

Of a total of 8,198 invitations sent, 2,769 women were screened and enrolled. The numbers of women who opted out, were unable to be reached, declined to participate, and were ineligible are shown Figure 1. Ultimately, 2,302 women completed surveys; the overall response rate was 28% and the response rate among enrolled participants was 83%. Using VA administrative data, participants were compared to non-participants from the sampling frame with respect to demographic measures including race/ethnicity, age, income, and marital status. To compare the groups, we calculated the difference in means or proportions divided by a pooled estimate of the standard deviation for each demographic measure (0.10 considered negligible, 0.20 considered small)[21]; participants were similar to non-participants with standardized differences that were minimal (0.07–0.13, Supplemental Table 1).

2.2 Measures

Twenty questions assessed knowledge about a range of contraceptive methods including tubal sterilization, intrauterine devices (IUDs), subdermal implants, and hormonal contraception as well as knowledge about sexually transmitted infection (STI) prevention and general pregnancy prevention. An overall correct knowledge score was computed (Cronbach's alpha, 0.70). Specific knowledge questions were grouped together into topical domains based on their conceptual relationships and their scores were computed to facilitate assessment of participant knowledge. The principal investigator (S.B.) developed the knowledge questions which were then reviewed by a panel of local and national family planning experts, and pilot tested with eight women Veterans recruited from the VA Pittsburgh Healthy Women's Center. Fifteen of the questions were true/false items and five questions were multiple choice; all questions had a "don't know" response option. Response categories were dichotomized as correct/incorrect, with "don't know" responses categorized as incorrect.

The independent variable of interest was self-reported race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and other). We examined age, marital status, education, income, parity, and branch of military service as covariates.

2.3 Analysis

We compared participant demographics by race/ethnicity using ANOVA for continuous variables and chi-square tests for categorical variables. We then compared responses across racial/ethnic groups for each contraceptive knowledge item using chi-square tests and for overall knowledge scores and topical domain scores (calculated as % correct) using ANOVA. Multivariable logistic regression was used to examine racial/ethnic variation in contraceptive knowledge items controlling for age, education level, income, marital status, parity, and military branch. For descriptive purposes, we evaluated the bivariate association of the knowledge scores (overall knowledge score and topical domain scores). However, given the discrete nature and skewness of the data, we did not include these outcomes in multivariable modeling. We also did not adjust for multiple comparisons as the goal of analysis was hypothesis generation with a priority to avoid type 2 statistical error [22]. "Other" race category was included in all analyses and shown in the tables; however, results are not discussed due to the heterogeneity of this group. Statistical analyses were performed using SAS software, version 9.3, with statistical significance set at $p < 0.05$.

3. Results

3.1 Sample Characteristics

Our total sample included 2,302 women Veterans: 52% were non-Hispanic white, 29% were non-Hispanic black, and 12% were Hispanic (Table 1). Black women were older than White and Hispanic women (mean age 36 vs 34 and 34, respectively; overall $p < 0.001$). White and Hispanic women were more likely to be married or living with a partner than Black women (56% and 52% vs 38%, overall $p < 0.001$). There were no racial/ethnic differences in educational attainment ($p = 0.41$).

3.2 Overall Knowledge

The overall contraceptive knowledge score was low and differed by race/ethnicity (Table 2). Out of the 20 contraception knowledge questions, the overall percent correct was 55%, and Black and Hispanic women had lower overall contraceptive knowledge scores than Whites (51% and 53% vs 58%, overall $p < 0.001$). There were racial/ethnic differences in almost all knowledge domains and individual knowledge items in both unadjusted and adjusted analyses, as described below and shown in Tables 2 and 3.

3.3 Sterilization

Black and Hispanic women had lower sterilization knowledge domain scores than Whites in bivariate analysis (53% and 53% vs 64%, overall $p < 0.001$; Table 2). In adjusted analysis (Table 3), compared to Whites, Black and Hispanic Veterans were less likely to know that tubal sterilization cannot be easily reversed (percentage point difference (PPD): −23.0; 95% CI: −27.8, −18.3 and PPD: −13.1; 95% CI: −19.5, −6.6, respectively), and Hispanic women

were less likely than Whites to know that there are other reversible methods of birth control as effective as tubal sterilization (PPD: −7.4; 95% CI: −13.6, −1.2).

3.4 IUDs and Implants

Black and Hispanic women had lower IUD and implant knowledge domain scores than Whites in bivariate analysis (41% and 46% vs 52%, overall p <0.001; Table 2). In adjusted analysis (Table 3), Black and Hispanic Veterans were less likely than Whites to know that nulliparous women can use IUDs (PPD: −8.8; 95% CI: −13.4, −4.2 and PPD: −6.7; 95% CI: −12.8, −0.6), that IUDs do not need to be replaced yearly (PPD: −11.5; 95% CI: −16.3, −6.7 and PPD: −8.3; 95% CI: −14.6, −2.0), that smokers over the age of 35 can safely use the copper IUD (PPD: −10.8; 95% CI: −14.5, −7.1 and PPD: −6.9; 95% CI: −12.1, −1.8) and that the copper IUD does not contain hormones (PPD: −16.7; 95% CI: −21.3, −12.0 and PPD: −9.8; 95% CI: −16.0, −3.6). Black women were less likely than Whites to know that contraceptive implants can prevent pregnancy for over one year (PPD: −5.1; 95% CI: −9.9, −0.3).

3.5 Hormonal Contraception

Black and Hispanic women had lower hormonal contraception knowledge domain scores than White women in bivariate analysis (50% and 51% vs 56%, overall p <0.001; Table 2). In adjusted analysis (Table 3), Black and Hispanic women were less likely than Whites to know that you do not need to stop using the contraceptive injection if you have irregular bleeding (PPD: −7.1; 95% CI: −12.0, −2.2 and PPD: −9.2; 95% CI: −15.6, −2.7), that birth control pills may cause a rise in blood pressure (PPD: −11.3; 95% CI: −16.2, −6.4 and PPD: −11.7; 95% CI: −18.1, −5.2), that birth control pills may cause periods to be lighter and reduce cramps (PPD: -−1.1; 95% CI: −15.5, −6.8 and PPD: −9.4; 95% CI: −15.2, −3.7), and that a vaginal ring does not need to be inserted by a doctor (PPD: −9.1; 95% CI: −13.9, −4.3 and PPD: −7.2; 95% CI: −13.6, −0.9). Black women were less likely than Whites to know that return to fertility might be delayed after using the contraceptive injection (PPD: −7.9; 95% CI: −11.9, −4.0) and that it is not dangerous to use methods that can suppress menses (PPD: −9.6; 95% CI: −14.4, −4.8). Black women were more likely than White women to know that women over the age of 17 could purchase emergency contraception without a prescription (PPD: 9.4; 95% CI: 5.2, 13.7)

3.6 STI Prevention

Black and Hispanic women had lower STI prevention knowledge domain scores than Whites in bivariate analysis (85% and 87% vs 90%, overall p < 0.001; Table 2). In adjusted analysis (Table 3), Black women were less likely than Whites to know that condoms were the only form of birth control that provides protection against STIs (PPD: −4.5; 95% CI: −7.7, −1.3) and less likely know that spermicides do not provide protection against STIs (PPD: −5.1; 95% CI: −8.6, −1.7).

3.7 Pregnancy Prevention

Pregnancy prevention knowledge domain scores were low but similar across all racial/ethnic groups (Table 2). Less than 50% of all participants correctly estimated the risk of pregnancy

with unprotected intercourse over the course of one year, with no differences by race/ethnicity. In adjusted analysis (Table 3), Black women were less likely than Whites to know that condoms were the least effective birth control method in a group of options that included IUDs, birth control pills, and the contraceptive injection (PPD: −7.4; 95% CI: −12.3, −2.5).

4. Discussion

In this survey study of women Veterans served by VA, we found that a substantial proportion of women had low levels of knowledge about contraception. Similar to the general US population, we found significant racial/ethnic differences, with Black and Hispanic Veterans having lower knowledge across a range of contraceptive knowledge domains.

Overall, women had particularly low levels of understanding about IUDs and implants, hormonal contraception and pregnancy prevention across all racial/ethnic groups. These findings are generally consistent with other research studies that have documented poor knowledge about prescription methods of contraception [14, 23]. Specifically, women often underestimate the effectiveness of birth control pills and overestimate the risk of side effects from hormonal contraceptives [14, 23]. Two recent studies examined the relationship between contraceptive knowledge and use of contraception and found that correct knowledge about effective contraceptive methods was associated with use of these methods [11, 14]. Knowledge is thus not only critical for informed contraceptive decision-making but also can shape contraceptive behaviors.

Similar to other research, our study also found that women underestimated the risk of pregnancy with unprotected intercourse over the course of one year [24, 25]. Research indicates that women often overestimate the risk of pregnancy with a single act of unprotected intercourse yet underestimate the overall cumulative risk of repeated unprotected intercourse [24]. Such misperceptions could have important implications for women’s use of contraception. For example, women may erroneously believe that they are subfertile or that their personal risk for pregnancy is low because they have previously engaged in unprotected intercourse without conception [24]. In fact, “didn’t think I could get pregnant” is a commonly cited reason for contraceptive non-use prior to experiencing an unintended conception [6, 26, 27]. Thus, assessing women’s perceived risk for pregnancy and correcting misperceptions is critical to help women make informed contraceptive decisions.

Compared to their White counterparts, Black and Hispanic women had consistently lower contraceptive knowledge scores across almost all domains. Nearly two thirds of minority women mistakenly believed that tubal sterilization is easily reversible, a belief that may make this method appear more appealing for some women. This knowledge deficit is particularly worrisome given the relatively high rates of tubal sterilization among Black and Hispanic women [7, 28, 29]. Black and Hispanic women were also less likely than Whites to know that nulliparous women can use IUDs and that IUDs do not need to be replaced annually. Such misperceptions about overly strict criteria for IUD use may falsely lead women to believe that these methods are not appropriate for them. In addition, Black women

were more likely to incorrectly believe that suppressing menses is dangerous, which may contribute to overestimations about the risk of hormonal contraception. Finally, Black women overestimated the efficacy of condoms; less than half of Black women surveyed knew that condoms were the least effective method of birth control when compared to IUDs, birth control pills and the contraceptive injection. Knowledge deficits around hormonal methods and the efficacy of condoms could help explain the higher reliance on condoms and lower rates of hormonal method use observed among women of color [4, 5, 7–9].

The underlying etiology for racial/ethnic disparities in contraceptive knowledge is not entirely clear but could be related to broader societal factors including culturally-based health myths, differences in exposure to school-based sexual health education, and differential sources of health information [30]. Despite the lack of differences in education attainment in our sample, level of education does not assess for quality of education, and past research indicated racial/ethnic disparities in education on contraception, which could impact the sexual health education this cohort of women received [31–33]. Another potential contributory factor may be that minority women often rely on information about contraception obtained from their peers and family rather than from health care providers or other medical professionals [30, 34].

Patient knowledge and preferences are both critical determinants of women's contraceptive decisions, and providers are well-positioned to help optimize both factors [11, 14, 35]. A patient-centered approach to contraceptive counseling seeks to ensure that women have the information and support they need to select a method that is a good fit for them and that they can use consistently and correctly over time [36]. Given our study findings, providers must assess individual women's knowledge of contraceptive methods and their understanding of the risk of pregnancy with unprotected intercourse to support their ability to make well-informed contraceptive decisions. Providers should also engage with patients' specific preferences, as preferences have been found to vary by race/ethnicity in both Veteran and non-Veteran populations, with Black and Hispanic women reporting preferences for methods of contraception that do not contain hormones, that they can stop at any time, that do not impact their periods, and that provide protection against STIs [17, 35, 37]. Although such preferences need to be respected, providers should ensure that these preferences are not based on incorrect knowledge or understanding. An ongoing study in VA is investigating the efficacy of a computerized tool to facilitate patient-centered contraceptive counseling that optimizes knowledge and attends to preferences [38]. Given that VA represents the largest integrated health care system in the US [39], evidence-based tools such as this can be widely disseminated and implemented, and can thus potentially mitigate observed contraceptive knowledge disparities.

There are a few limitations to consider in this study. First, there is no validated measure of contraceptive knowledge. As such, the knowledge items used in this survey may not fully assess all aspects of contraceptive knowledge that are relevant in contraceptive decision making. Second, the findings cannot be generalized to women Veterans who do not use VA for health care. Compared to Veterans who do not use VA Healthcare, VA-users are more likely to have lower socioeconomic status, lack private medical insurance, and be a racial/ethnic minority [40], factors that could potentially impact levels of contraceptive knowledge.

Another limitation of the study is that the survey does not have a sufficiently large American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander sample to explore differences among these racial groups. Finally, our response rate of 28% is somewhat low. However, our comparison of participants to non-participants indicated that differences between the groups were minimal. Despite these limitations, our study provides new information regarding contraceptive knowledge in a national sample of women Veterans.

In summary, there is ample opportunity to improve women Veterans' knowledge about important aspects of available contraceptive methods, which may help optimize contraceptive method selection for women and ultimately improve women's ability to effectively use their chosen contraceptive method over time. Providers within the VA healthcare system should assess and address contraceptive knowledge gaps as part of high-quality, patient-centered reproductive health care. Continued research is needed to determine the most effective means to improve women's overall understanding about various contraceptive methods and eliminate contraceptive knowledge disparities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This study was supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, VA Merit Award IIR 12-124 (PI: Sonya Borrero). Dr. Callegari is supported by a Health Services Research & Development (HSR&D) VA Career Development Award 14-412. The views and opinions of authors expressed herein do not necessarily state or reflect those of the Department of Veterans Affairs or the United States Government.

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Implications

Providers in the VA healthcare system should assess and address contraceptive knowledge gaps as part of high-quality, patient-centered reproductive health care.

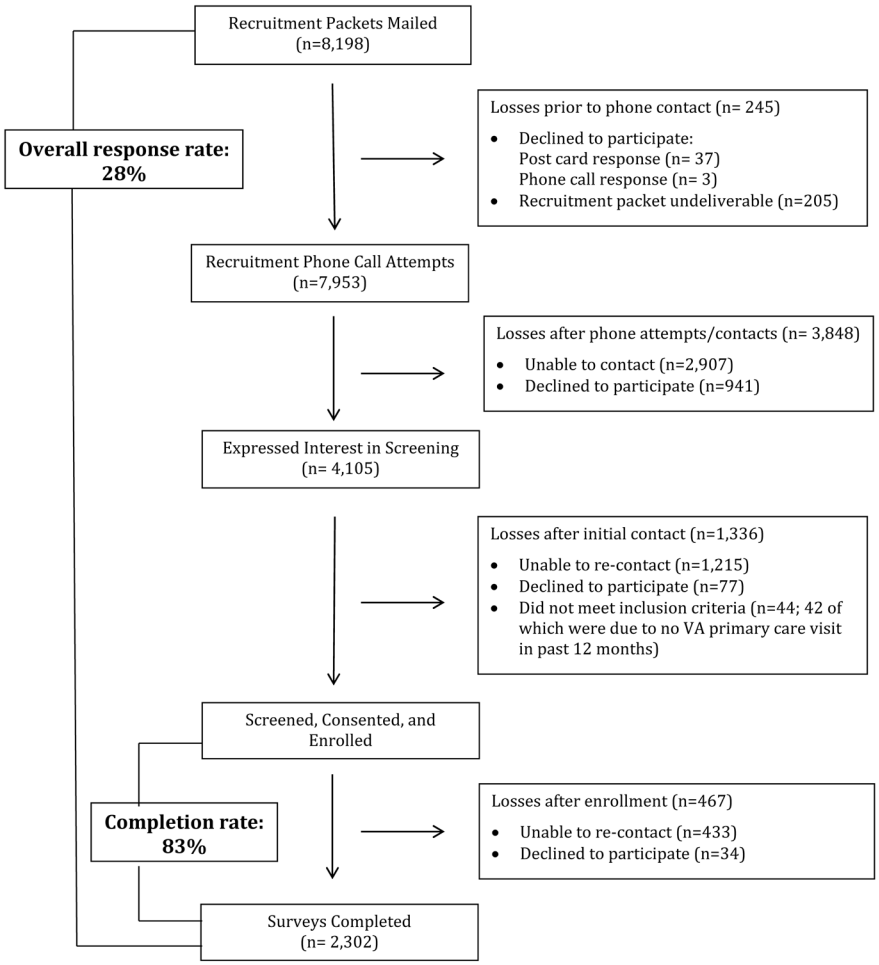

Figure 1.
Flow diagram showing participant recruitment and response rates

Table 1

Women Demographics by Race/Ethnicity

Characteristics	All (2,302)	NH White (1,188; 52%)	NH Black (665; 29%)	Hispanic (285; 12%)	NH Other (164; 7%)	P-value[a]
Age, mean (se[b]), years	**35 (6)**	**34 (6)**	**36 (5)**	**34 (6)**	**34 (5)**	<0.001
Marital Status						
Single	**23**	**19**	**30**	**27**	**21**	
Married/living with partner	**50**	**56**	**38**	**52**	**52**	<0.001
D/S/W[c]	**27**	**25**	**32**	**21**	**28**	
Military Branch						
Army	**50**	**46**	**58**	**51**	**49**	
Navy	**23**	**23**	**21**	**21**	**26**	
Marine Corps	**7**	**7**	**6**	**8**	**10**	<0.001
Air Force	**19**	**21**	**15**	**19**	**13**	
Coast Guard	**1**	**2**	**<1**	**<1**	**1**	
Education Level						
High school/GED/technical school	9	9	8	10	7	
Some college	38	39	37	35	41	0.41
College	39	39	40	44	37	
Master's degree or higher	14	13	16	11	15	
Income						
<$20,000	**20**	**21**	**19**	**19**	**24**	
$20,000 to <$40,000	**32**	**30**	**32**	**35**	**36**	0.004
$40,000 to <$60,000	**22**	**20**	**26**	**24**	**19**	
≥$60,000	**26**	**29**	**22**	**22**	**21**	
Parity						
0	**37**	**40**	**31**	**37**	**35**	
1	**24**	**23**	**26**	**24**	**26**	0.002
2	**25**	**25**	**25**	**25**	**25**	
≥3	**14**	**12**	**18**	**14**	**13**	

Missing under the Hispanic ethnicity question was coded as non-Hispanic and missing race was coded as other race

Numbers represent column percent unless otherwise noted

Missing data: marital status (n=2), income (n=25)

[a] P-value for the difference among the four race groups

[b] se, standard error

[c] D/S/W divorced/separated/widowed

Table 2

Percentage of Women Answering Each Knowledge Item Correctly by Race/Ethnicity

Knowledge Questions	All (2,302)	NH White (1,188; 52%)	NH Black (665; 29%)	Hispanic (285; 12%)	NH Other (164; 7%)	P-value
Sterilization						
Tubal sterilization is easily reversible (F)	**49**	**59**	**36**	**46**	**40**	<0.001
There are reversible methods of birth control as effective as tubal sterilization (T)	**67**	**69**	**69**	**61**	**58**	0.004
IUDs/implants						
Only women who delivered a baby can use IUDs (F)	**68**	**72**	**62**	**66**	**62**	<0.001
IUDs available in the US must be replaced yearly (F)	**50**	**54**	**42**	**48**	**51**	<0.001
Smokers over the age of 35 can safely use this method (copper IUD)	**20**	**25**	**14**	**17**	**16**	<0.001
Birth control that does not contain any hormones (copper IUD)	**40**	**47**	**30**	**38**	**34**	<0.001
Contraceptive implants can prevent pregnancy for over 1 year (T)	**60**	**63**	**58**	**60**	**52**	0.01
Hormonal contraception						
You should stop using the contraceptive injection if you have irregular bleeding (F)	**52**	**56**	**49**	**47**	**41**	<0.001
Birth control injections cause permanent bone loss (F)	28	30	27	27	26	0.35
Often hard to become pregnant soon after stopping the following birth control methods (contraceptive injection)	**22**	**26**	**18**	**20**	**17**	<0.001
Birth control pills may cause a rise in blood pressure (T)	**52**	**57**	**45**	**45**	**46**	<0.001
Birth control pills often make periods lighter and less crampy (T)	**74**	**80**	**69**	**69**	**67**	<0.001
It is dangerous to use birth control methods that suppress menses (F)	**62**	**67**	**56**	**64**	**52**	<0.001
Showering while using the patch will affect its effectiveness (F)	65	64	67	64	62	0.54
Vaginal rings must be inserted by a doctor (F)	**52**	**56**	**45**	**49**	**51**	<0.001
Women 17 years and older can buy emergency contraception without a prescription (T)	**70**	**67**	**75**	**72**	**68**	0.004
STI prevention						
Birth control that provides protection against sexually transmitted infections (condoms)	**89**	**91**	**87**	**87**	**90**	0.03
Spermicides do not protect against sexually transmitted infections (T)	**87**	**89**	**83**	**87**	**87**	0.004
Pregnancy prevention						
Which of these birth control methods is typically the LEAST effective in preventing pregnancy? (condoms)	**50**	**53**	**45**	**49**	**41**	
If 100 sexually active women did not use any birth control for 1 year, how many would get pregnant? (85)	46	44	50	48	45	0.15
Knowledge score as % correct, mean (se)						
Sterilization (min-max: 0–2)	**58 (35)**	**64 (35)**	**53 (34)**	**53 (34)**	**49 (36)**	<0.001

Knowledge Questions	All (2,302)	NH White (1,188; 52%)	NH Black (665; 29%)	Hispanic (285; 12%)	NH Other (164; 7%)	P-value
IUD (0–5)	**48 (27)**	**52 (27)**	**41 (26)**	**46 (27)**	**43 (27)**	<0.001
Hormonal contraception (0–9)	**53 (22)**	**56 (22)**	**50 (22)**	**51 (22)**	**48 (21)**	<0.001
STI prevention (0–2)	**88 (24)**	**90 (22)**	**85 (26)**	**87 (25)**	**88 (25)**	<0.001
Pregnancy prevention (0–2)	48 (36)	49 (36)	47 (36)	49 (35)	43 (36)	0.31
Overall (0–20)	**55 (18)**	**58 (17)**	**51 (18)**	**53 (17)**	**50 (18)**	<0.001

P-value for each contraceptive knowledge item from chi-square tests and for overall knowledge scores and topical domain scores from ANOVA.

Table 3

Adjusted Percent Point Difference of Answering Knowledge Item Correctly by Race/Ethnicity

Knowledge Questions	NH Black vs. NH White %Difference (95%CI)	Hispanic vs. NH White %Difference (95%CI)	NH Other vs. NH White %Difference (95%CI)
Sterilization			
Tubal sterilization is easily reversible (F)	**−23.0 (−27.8, −18.3)[c]**	**−13.1 (−19.5, −6.6)[c]**	**−18.1 (−26.2, −10.0)[c]**
There are reversible methods of birth control as effective as tubal sterilization (T)	0.7 (−3.8, 5.1)	**−7.4 (−13.6, −1.2)[a]**	**−11.1 (−19.1, −3.1)[b]**
IUDs/implants			
Only women who delivered a baby can use IUDs (F)	**−8.8 (−13.4, −4.2)[c]**	**−6.7 (−12.8, −0.6)[a]**	**−10.6 (−18.5, −2.7)[b]**
IUDs available in the US must be replaced yearly (F)	**−11.5 (−16.3, −6.7)[c]**	**−8.3 (−14.6, −2.0)[b]**	−3.1 (−11.2, 4.9)
Smokers over the age of 35 can safely use this method (copper IUD)	**−10.8 (−14.5, −7.1)[c]**	**−6.9 (−12.1, −1.8)[b]**	**−8.1 (−14.4, −1.8)[b]**
Birth control that does not contain any hormones (copper IUD)	**−16.7 (−21.3, −12.0)[c]**	**−9.8 (−16.0, −3.6) [c]**	**−13.3 (−21.0, −5.5)[c]**
Contraceptive implants can prevent pregnancy for over 1 year (T)	**−5.1 (−9.9, −0.3)[a]**	−2.4 (−8.7, 4.0)	**−12.1 (−20.3, −3.9)[c]**
Hormonal contraception			
You should stop using the contraceptive injection if you have irregular bleeding (F)	**−7.1 (−12.0, −2.2)[c]**	**−9.2 (−15.6, −2.7)[b]**	**−14.8 (−23.0, −6.7)[c]**
Birth control injections cause permanent bone loss (F)	−3.3 (−7.7, 1.1)	−2.4 (−8.3, 3.4)	−4.3 (−11.6, 3.0)
Often hard to become pregnant soon after stopping the following birth control methods (contraceptive injection)	**−7.9 (−11.9, −4.0)[c]**	−5.3 (−10.6, 0)	**−8.8 (−15.1, −2.5)[b]**
Birth control pills may cause a rise in blood pressure (T)	**−11.3 (−16.2, −6.4)[c]**	**−11.7 (−18.1, −5.2)[c]**	**−10.3 (−18.5, −2.1)[b]**
Birth control pills often make periods lighter and less crampy (T)	**−11.1 (−15.5, −6.8)[c]**	**−9.4 (−15.2, −3.7)[c]**	**−10.8 (−18.3, −3.4)[c]**
It is dangerous to use birth control methods that suppress menses (F)	**−9.6 (−14.4, −4.8)[c]**	−3.2 (−9.5, 3.0)	**−14.2 (−22.4, −6.1)[c]**
Showering while using the patch will affect its effectiveness (F)	4.6 (0, 9.2)	−0.2 (−6.5, 6.0)	−0.9 (−8.9, 7.0)
Vaginal rings must be inserted by a doctor (F)	**−9.1 (−13.9, −4.3)[c]**	**−7.2 (−13.6, −0.9)[a]**	−5.0 (−13.1, 3.1)
Women 17 years and older can buy emergency contraception without a prescription (T)	**9.4 (5.2, 13.7)[c]**	3.3 (−2.6, 9.3)	0.6 (−7.1, 8.2)
STI prevention			
Birth control that provides protection against sexually transmitted infections (condoms)	**−4.5 (−7.7, −1.3)[b]**	−4.1 (−8.3, 0.1)	−1.0 (−5.9, 4.0)
Spermicides do not protect against sexually transmitted infections (T)	**−5.1 (−8.6, −1.7)[c]**	−1.7 (−6.1, 2.6)	−1.4 (−6.9, 4.1)
Pregnancy prevention			
Which of these birth control methods is typically the LEAST effective in preventing pregnancy? (condoms)	**−7.4 (−12.3, −2.5)[c]**	−2.5 (−9.0, 4.0)	**−10.5 (−18.7, −2.3)[b]**
If 100 sexually active women did not use any birth control for 1 year, how many would get pregnant? (85)	3.7 (−1.1, 8.6)	2.8 (−3.6, 9.3)	1.3 (−6.8, 9.5)

NH, Non-Hispanic; CI, confidence interval; F, false; T, true; IUD, intrauterine device; STI, sexually transmitted infection

Models were adjusted for age, education level, income, marital status, military branch, and parity

N=2,275 due to missing data for marital status and income

Values in bold indicate statistical significance as follows: p-value 0.05 (a), p-value 0.01 (b), p-value <0.001(c).