



## Contraceptive knowledge among women at risk of unintended pregnancy in Kingston, Jamaica

Tina Hylton-Kong , Althea Bailey , Markus J. Steiner & Maria F. Gallo

To cite this article: Tina Hylton-Kong , Althea Bailey , Markus J. Steiner & Maria F. Gallo (2021): Contraceptive knowledge among women at risk of unintended pregnancy in Kingston, Jamaica, Women & Health, DOI: [10.1080/03630242.2021.1876812](https://doi.org/10.1080/03630242.2021.1876812)

To link to this article: <https://doi.org/10.1080/03630242.2021.1876812>



© 2021 The Author(s). Published with license by Taylor & Francis Group, LLC.



Published online: 24 Jan 2021.



Submit your article to this journal [↗](#)



Article views: 29



View related articles [↗](#)



View Crossmark data [↗](#)

## Contraceptive knowledge among women at risk of unintended pregnancy in Kingston, Jamaica

Tina Hylton-Kong MD, MPH<sup>a</sup>, Althea Bailey DrPH<sup>b</sup>, Markus J. Steiner PhD<sup>c</sup>, and Maria F. Gallo PhD<sup>d</sup>

<sup>a</sup>Jamaica Ministry of Health, Epidemiology Research and Training Unit (ERTU), Kingston, Jamaica; <sup>b</sup>Department of Community Health and Psychiatry, The University of the West Indies at Mona, Mona, Jamaica; <sup>c</sup>Contraceptive Technology Innovation Division, FHI 360, Durham, North Carolina, USA; <sup>d</sup>College of Public Health, Division of Epidemiology, The Ohio State University, Columbus, Ohio, USA

### ABSTRACT

Low contraceptive knowledge may limit contraception initiation or continuation and, consequently, could represent an important, modifiable cause of unintended pregnancy. The objective of this analysis was to identify correlates of knowledge among women at risk of unintended pregnancy. We analyzed data from a study of 222 young women attending a public clinic in Kingston in November 2018 to March 2019. We measured contraceptive knowledge with seven questions on method reversibility, ability to use covertly, contraindications, and side effects. We used multivariable linear regression to evaluate the correlates of summary knowledge scores and report beta coefficients, which represent differences in mean summary knowledge scores. The mean knowledge score was low (2.7; range = 0–7). Only 30.2% of the participants correctly identified intrauterine devices as more effective than oral contraception, male condoms, and withdrawal. Women who reported that their provider discussed contraception scored higher (adjusted  $\beta = 0.37$ ,  $p = 0.05$ ) than those not reporting this. Women who perceived implants as very/mostly safe scored higher (adjusted  $\beta = 0.45$ ,  $p = 0.01$ ) than those perceiving the device as mostly/very unsafe. Finally, compared to contraception non-users, women using less-effective contraception had a lower score (adjusted  $\beta = -0.40$ ,  $p = 0.04$ ) while those using effective contraception did not differ in scores ( $\beta = -0.30$ ,  $p = 0.18$ ). Overall, we found poor contraceptive knowledge among young women in Kingston. Providers appeared to hold an important role in women's understanding of contraception.

### ARTICLE HISTORY



Received 8 February 2020  
Revised 20 November 2020  
Accepted 10 January 2021

### KEYWORDS

Behavior; contraception; Jamaica; knowledge; unwanted pregnancy; young adult

## Introduction

Poor understanding of contraception has been detected in a variety of populations and settings (Eisenberg et al. 2012; Frost, Lindburg, and Finer 2012; Grimes and Schulz 2011; Machiyama et al. 2018; Rosenfeld et al. 2017; Stanwood and Bradley 2006). Women may hold misconceptions about side effects of contraception; for example, a common belief is that contraception causes difficulties in conceiving after method discontinuation, or even results in permanent infertility (Diamond-Smith, Campbell, and Madan 2012; Machiyama et al. 2018; Ochako et al. 2015). Another concern is that method-related amenorrhea leads to the harmful buildup of “blocked” or “dirty” blood in the woman (Polis, Hussain, and Berry 2018). Women also report misunderstandings about the effectiveness of various methods (Stanback et al. 2015). For example, non-users of the intrauterine device (IUD) in Vietnam were less likely to accurately identify the method's high effectiveness compared to IUD users while condom users were more likely to overestimate

**CONTACT** Maria F. Gallo  gallo.86@osu.edu  College of Public Health, Division of Epidemiology, The Ohio State University, Cunz Hall, 1841 Neil Avenue, Columbus, Ohio 43210, USA.

ClinicalTrials.gov Identifier: NCT03775642

© 2021 The Author(s). Published with license by Taylor & Francis Group, LLC.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

condom effectiveness (Gallo et al. 2019). Finally, women – as well as health care providers – have reported inaccurate understanding of contraindications to specific methods or more generally their suitability for young or nulliparous women (Daniele et al. 2017).

These misconceptions about contraception are important because they may limit the initiation or continuation of method use and, consequently, could represent an important, modifiable cause of unintended pregnancy. Poor knowledge about contraception was associated with contraception nonuse or pregnancy among unmarried women and men in a nationally representative survey in the U.S. (Frost, Lindburg, and Finer 2012). Likewise, an analysis of the National Longitudinal Survey of Adolescent to Adult Health data found that adolescent women's knowledge about condoms and reproduction predicted their subsequent use of contraception during their adulthood (Guzzo and Hayford 2018).

In Jamaica, the use of long-acting reversible contraception (LARC) is low and declining despite its availability without user fees as part of standard care. The Jamaica National Family Planning Board's reproductive-health survey, last conducted in 2008, found that the intrauterine device (IUD) and contraceptive implant accounted for low proportions of method use (1.6% and 0.9%, respectively) (Serbanescu, Ruiz, and Suchdev 2010). More recent data show a 19.5% decline in uptake of the copper IUD (only type publicly available) from 2014 to 2015 and that virtually no ( $n = 55$ ) implants were inserted in 2015 (Jamaica National Family Planning Board 2014). We sought to better understand the low uptake of LARC by identifying the demographic and behavioral factors associated with women's contraceptive knowledge among non-users of long-acting contraception who were sexually active and not desiring pregnancy.

## Materials and methods

### Study participants

We conducted a secondary data analysis using enrollment data from a study of 222 women, 18–25 years of age, who were recruited from a convenience sample of women attending for care or were accompanying someone else, at a large public clinic in Kingston, Jamaica during November 2018 to March 2019. To be eligible for the study, women had to be sexually active (defined as  $\geq 1$  penile-vaginal act in past month) and not desire pregnancy in the next 12 months. We excluded women who had a recognized pregnancy, were breastfeeding, or were using long-acting contraception (i.e., tubal ligation, IUD, or implant). The primary aim of the parent study was to develop a video intervention to address misconceptions about the intrauterine device (IUD) and implant and to evaluate whether the video increased women's perceptions of the safety and naturalness of the two methods during three months of follow up. The objective of the present analysis was to identify correlates of knowledge among women at risk of unintended pregnancy.

The study enrolled only women who provided written consent in the presence of a witness. The Ohio State University institutional review board and the Jamaica Ministry of Health Ethics Committee approved the protocol before the study began.

### Data collection

Female study interviewers administered an enrollment questionnaire, which included data on participant demographics, current contraceptive method use, and contraceptive-related knowledge. The latter was measured with seven questions, which we adapted from the Contraceptive Assessment Tool, which was designed to measure contraceptive knowledge using a set of multiple-choice questions (Haynes et al. 2017). We selected our set of questions to assess participant knowledge of the relative effectiveness of contraceptive methods, their reversibility, ability to use methods covertly, contraindications, and side effects. For each question, the interviewer read the possible responses, asked the

participant to choose the best single response, and then recorded this directly into the web-based, electronic data capture system, REDCap (Harris et al. 2009).

### Data analyses

We summed the correct number of responses to the contraceptive knowledge questions to create a summary knowledge score (possible range of 0–7). Those reporting “don’t know” or who declined to answer the question were categorized as having an incorrect response. We assessed the following factors as potential correlates of contraceptive knowledge: age (terciles); highest educational grade achieved (high school or less vs. vocational or skills training vs. some college or university); fulltime employment (yes vs. no); union status (married or common-law or cohabiting vs. other); have live children (yes vs. no); the provider has discussed contraception (yes vs. no); and current contraception use (effective vs. less-effective vs. none). We categorized contraceptive methods as “effective” if they result in 6–12 pregnancies per 100 women per year (i.e., injectable or oral contraception) or “less-effective” if they result in 18 or more pregnancies per 100 women per year (i.e., male or female condoms, withdrawal, fertility-awareness-based methods) (Curtis et al. 2016). If the woman reported multiple methods, we categorized her according to the most effective method reported. We also evaluated the association with knowing someone who has used IUD or implant (yes vs. no); perception of IUD safety (very or mostly safe vs. very or mostly unsafe or decline); perception of implant safety (very or mostly safe vs. very or mostly unsafe or decline); and believe they know more about contraception safety than health care providers (a lot or a little more or the same vs. a little less or a lot less). Finally, we assessed three variables that measured whether they trusted the following types of individuals to give accurate information about contraception safety: health care providers, family, and friends, or celebrities. Responses were dichotomized as very much vs. somewhat or not at all.

We evaluated all potential correlates separately in a linear regression model with the summary knowledge score. We report beta coefficients, which represent differences in mean summary knowledge scores. All correlates that were associated with the outcome in the bivariable analysis using a  $p$  of  $\leq 0.25$  were then included in a full linear regression model. We then used backward elimination to remove variables not associated with the summary knowledge score at an alpha level of  $< 0.05$  to produce the final adjusted model (Hosmer, Lemeshow, and Sturdivant 2013). Analyses were conducted in SAS, version 9.2 (SAS Institute Inc., Cary, North Carolina).

### Results

Of the 320 women screened for the study, 95 did not meet the eligibility requirements. Several women declined to screen for the study, but the study interviewers failed to document this rare event. Of the 225 women were enrolled, three were missing data on the contraceptive knowledge questions. Thus, the analysis was based on 222 participants. Study participants had a mean age of 21.3 years (standard deviation, 2.4; range, 18–25). Most participants were not employed fulltime (77.9%), were married or cohabiting (64.8%), and reported that their health provider had discussed contraception with them (72.9%) (Table 1). Current use of effective methods included injectable contraception (15.8%;  $n = 35$ ) and oral contraception (5.4%;  $n = 10$ ) while current use of less-effective methods included male condoms (42.3%;  $n = 68$ ) and withdrawal or fertility awareness-based methods (6.3%;  $n = 2$ ). Overall, 48.2% ( $n = 107$ ) reported no method use.

The mean summary knowledge score of the seven questions on contraception was 2.7 (SD, 1.3; range, 0–7; Cronbach’s alpha, 0.16). For most individual questions on contraception, only a minority of participants answered the question correctly, and a substantial proportion (9.0%–48.6%) responded “do not know” (Table 2). For example, 27% of the participants thought that withdrawal was as or more effective than condoms for preventing pregnancy while another 19% believed using two condoms was more effective than one. About 46% of the women believed that male condoms, oral contraception, or withdrawal were as or more effective than the IUD for contraception, and an additional 21% reported

**Table 1.** Demographics and other characteristics and behaviors among sexually active women in Kingston, Jamaica (N = 222).

	n	(%)
Age in years		
18–19	70	(31.5)
20–23	72	(32.4)
24–25	80	(36.0)
Highest educational grade achieved		
High school or less	127	(57.5)
Vocational/skills training	60	(27.2)
Some college or university	34	(15.4)
Fulltime employment		
Yes	49	(22.1)
No	173	(77.9)
Union status		
Married, common-law, cohabiting	142	(64.8)
Other	77	(35.2)
Have live children		
Yes	100	(45.7)
No	119	(54.3)
Health provider has discussed contraception		
Yes	161	(72.9)
No	60	(27.2)
Current contraceptive method use*		
Effective method	45	(20.3)
Less-effective method	70	(31.5)
None	107	(48.2)
Know someone who has used IUD or implant		
Yes	169	(76.1)
No	53	(23.9)
Perception of IUD safety		
Very safe, mostly safe	87	(39.2)
Mostly unsafe, very unsafe	82	(36.9)
Decline	53	(23.9)
Perception of implant safety		
Very safe, mostly safe	130	(58.8)
Mostly unsafe, very unsafe	71	(32.1)
Decline	20	(9.1)
Believe they know more about contraception safety than health care providers		
A lot, a little more, or the same	24	(10.9)
A little less, or a lot less	197	(89.1)
Trust health care providers to give accurate information about contraception safety		
Very much	132	(60.8)
Somewhat or not at all	85	(39.2)
Trust family and friends to give accurate information about contraception safety		
Very much	64	(29.2)
Somewhat or not at all	155	(70.8)
Trust celebrities to give accurate information about contraception safety		
Very much	17	(7.9)
Somewhat or not at all	199	(92.1)

\*If multiple responses were provided, the woman was categorized according to the most effective method used. Effective methods included injectable contraception and oral contraception; less-effective methods included male condoms, withdrawal or fertility awareness-based methods

not knowing their relative effectiveness. Also, some women erroneously believed that oral contraception (13.5%), injectable contraception (10.4%), or implants (9%) can cause infertility.

In the bivariable analyses, three factors were associated with the summary knowledge score (Table 3). Those having an educational level of high school or less had a higher score ( $\beta = 0.47$ ;  $p = .05$ ) than those with at least some university or college education. Women who perceived the implant to be very or mostly safe had a higher summary score than those perceiving the method to be very or mostly unsafe

**Table 2.** Correct responses to contraceptive knowledge questions among sexually active women in Kingston, Jamaica (N = 222).

Questions and possible responses <sup>a</sup>	No.	(%)
Which of these is best for avoiding pregnancy?		
<i>Using a condom every time you have sex</i>	92	(41.4)
<i>Using two condoms every time you have sex</i>	43	(19.4)
<i>Douching, showering, or bathing immediately after sex</i>	1	(0.5)
<i>"Pulling out" before ejaculation</i>	30	(13.5)
<i>They are all equally effective</i>	30	(13.5)
<i>Don't know</i>	20	(9.0)
<i>Decline</i>	6	(2.7)
Which is the only birth control method that helps prevent infections?		
<i>The birth control pill</i>	13	(5.9)
<i>Male and female condoms</i>	113	(50.9)
<i>Norplant (contraceptive implant)</i>	6	(2.7)
<i>IUD</i>	8	(3.6)
<i>Don't know</i>	77	(34.7)
<i>Decline</i>	5	(2.3)
Which of the following birth control methods may be reversed if you decide you want to become pregnant?		
<i>Tubal ligation</i>	19	(8.6)
<i>Vasectomy</i>	1	(0.5)
<i>IUD (intrauterine device)</i>	88	(39.6)
<i>None of the above</i>	17	(7.7)
<i>Don't know</i>	90	(40.5)
<i>Decline</i>	7	(3.2)
Which birth control method is not easily noticed by a partner <sup>b</sup>		
<i>IUD (intrauterine device, copper T)</i>	38	(17.1)
<i>The injection (Depo, Petogen)</i>	96	(43.2)
<i>The implant (Jadelle, Sino-implant)</i>	24	(10.8)
<i>They all aren't easily noticed</i>	28	(12.6)
<i>Don't know</i>	34	(15.3)
<i>Decline</i>	2	(0.9)
Which method of birth control is the best at preventing pregnancy?		
<i>IUD (intrauterine device, copper T)</i>	67	(30.2)
<i>The pill</i>	20	(9.0)
<i>Male condom</i>	29	(13.1)
<i>Withdrawal ("pull-out method")</i>	14	(6.3)
<i>They are all equally effective</i>	39	(17.6)
<i>Don't know</i>	46	(20.7)
<i>Decline</i>	7	(3.2)
Which statement is true about IUDs (intrauterine devices)?		
<i>Women of all ages may get an IUD</i>	15	(6.8)
<i>Women who have never had a baby may get an IUD</i>	9	(4.1)
<i>Women can have an IUD put in right after having a baby or having an abortion</i>	47	(21.2)
<i>They are all true</i>	44	(19.8)
<i>Don't know</i>	99	(44.6)
<i>Decline</i>	8	(3.6)
Which method of birth control can cause infertility?		
<i>The pill</i>	30	(13.5)
<i>Injection (Depo, Petogen)</i>	23	(10.4)
<i>The implant (Jadelle, Sino-implant)</i>	20	(9.0)
<i>None of the above</i>	31	(14.0)
<i>Don't know</i>	108	(48.6)
<i>Decline</i>	10	(4.5)

<sup>a</sup>Bold text indicates the correct response

<sup>b</sup>The intended answer was "they aren't all easily noticed," but because the implant could be detectable, especially in women with low body mass index, "IUD" and "the injection" also were scored as correct.

( $\beta = 0.42$ ;  $p = .01$ ). Those using a less-effective contraceptive method had a *lower* summary score ( $\beta = -0.42$ ;  $p = .03$ ) compared to contraception non-users.

In the multivariable analysis, education did not remain statistically significantly associated with the summary knowledge score (Table 4). The other two factors remained significant: those perceiving the implant to be very or mostly safe had a higher summary score than those perceiving the method to be

**Table 3.** Correlates of summary contraceptive knowledge score from bivariable analysis among sexually active women in Kingston, Jamaica (N = 222).

	$\beta$	$p$
Age in years	0.05	.17
Highest educational grade achieved		
High school or less	0.47	.05
Vocational/skills training	0.15	.58
At least some college or university	Ref	
Fulltime employment		
Yes	0.29	.15
No	Ref	
Union status		
Married, common-law, cohabiting	-0.05	.76
Other	Ref	
Have live children		
Yes	0.03	.87
No	Ref	
Health provider has discussed contraception		
Yes	0.33	.09
No	Ref	
Current contraceptive method used		
Effective method	-0.29	.21
Less-effective method	-0.42	.03
None	Ref	
Know someone who has used IUD or implant		
Yes	-0.09	.67
No	Ref	
Perception of IUD safety		
Very safe, mostly safe	0.23	.19
Mostly unsafe, very unsafe	Ref	
Perception of implant safety		
Very safe, mostly safe	0.42	.01
Mostly unsafe, very unsafe	Ref	
Know more about contraception safety than providers		
Yes, a lot or a little more	0.44	.11
No, the same, a little less, or a lot less	Ref	
Trust health care providers to give accurate information about contraception safety		
Very much	0.01	.97
Somewhat or not at all	Ref	
Trust family and friends to give accurate information about contraception safety		
Very much	0.01	.97
Somewhat or not at all	Ref	
Trust celebrities to give accurate information about contraception safety		
Very much	-0.37	.25
Somewhat or not at all	Ref	

IUD = intrauterine device

<sup>a</sup>Summary score based on responses to seven questions with one point assigned for each correct response; thus, the scores ranged from 0–7. If multiple responses were provided, the woman was categorized according to the most effective method used; Effective methods included injectable contraception and oral contraception; less-effective methods included male condoms, withdrawal or fertility awareness-based methods

very or mostly unsafe (adjusted  $\beta = 0.42$ ;  $p = .01$ ). Compared to those not using contraception, those using a less-effective contraceptive method or an effective method had *lower* summary scores (adjusted  $\beta = -0.42$ ;  $p = .03$  and adjusted  $\beta = -0.29$ ;  $p = .21$ , respectively) although the latter was not statistically significant. Finally, one other factor emerged as significant: those reporting that their health care provider had discussed contraception with them had higher summary score (adjusted  $\beta = 0.37$ ;  $p = .05$ ) compared to those not reporting having had this discussion.

## Discussion

Contraceptive knowledge was low among the study population of young (18–25 years), sexually active women in Kingston who did not desire pregnancy in the next year. Notably, women had poor

**Table 4.** Correlates of summary contraceptive knowledge score from multivariable analysis among sexually active women in Kingston, Jamaica (N = 222).

	adjusted $\beta^b$	<i>p</i>
Health provider has discussed contraception		
Yes	0.37	.05
No	Ref	
Current contraceptive method use <sup>c</sup>		
Effective method	−0.30	.18
Less-effective method	−0.40	.04
None	Ref	
Perception of implant safety		
Very safe, mostly safe	0.45	.01
Mostly unsafe, very unsafe	Ref	

<sup>a</sup>Summary score based on responses to seven questions with one point assigned for each correct response; thus, the scores ranged from 0–7; <sup>b</sup>Adjusted for all variables in the table; <sup>c</sup>If multiple responses were provided, the woman was categorized according to the most effective method used; Effective methods included injectable contraception and oral contraception; less-effective methods included male condoms, withdrawal or fertility awareness-based methods

knowledge of the relative effectiveness of different methods. Only 30.2% of the participants correctly identified the IUD as more effective than oral contraception, male condoms, and withdrawal. Women also lacked knowledge regarding whether young, nulliparous, or postpartum women could use the IUD, and they reported misconceptions about contraception causing infertility. These findings are consistent with previous research revealing poor knowledge about contraception among women in a range of settings (Eisenberg et al. 2012; Frost, Lindburg, and Finer 2012; Rosenfeld et al. 2017; Stanwood and Bradley 2006). This deficiency is important as, arguably, a certain amount of knowledge about contraceptive methods is required for women to be able to make an informed choice about contraception use (Stanback et al. 2015).

We found three factors to be associated with the contraceptive summary knowledge score. First, women who perceived implants as very/mostly safe had a higher summary knowledge score relative to those who perceived the device as mostly/very unsafe. Also, women who reported that their health care provider discussed contraception with them had a higher score than those not reporting having had this discussion. These findings underscore the important role that providers can hold in improving women's understanding of contraception and addressing any concerns about method safety. Professional and governmental guidelines call for obstetrician–gynecologists and other health care providers to routinely address patient contraceptive needs and concerns regardless of the patient's age (ACOG 2017; Jamaica Ministry of Health 2015). However, providers themselves can hold misconceptions about contraception (Harper et al. 2012; Howatt et al. 2019; Luchowski et al. 2014). Future research could focus on interventions to ensure providers are knowledgeable about the available methods and consistently adhere to contraceptive counseling recommendations.

Finally, we found an association between contraception use and summary knowledge score. Surprisingly, compared to non-users, summary knowledge scores were *lower* among users of less-effective contraceptive methods and effective methods, although the latter was not statistically significant. This suggests that overall contraceptive knowledge may not be critical to the decision to initiate or continue to use contraception. This finding, though, is not consistent with a past study conducted among a nationally representative sample in the U.S. that demonstrated a positive association between a higher contraceptive knowledge summary measure and contraception use (Frost, Lindburg, and Finer 2012). One notable difference between the studies is that we did not enroll women who were using a long-acting method; we do not know whether women using a LARC method in Jamaica have higher contraceptive knowledge than women in our sample.

Numerous interventions have been designed to improve women's contraceptive knowledge; however, evaluations of their effectiveness against behavioral change (e.g., higher contraceptive method



use or reduced pregnancy) have yielded inconsistent findings (Dewart et al. 2019; Oringanje et al. 2016). In the present study, contraceptive knowledge might not have been a salient factor for motivating contraception use among the study population. That is, other unmeasured factors (e.g., access to choice of method, strength of desire to avoid pregnancy, past experiences with side effects, cultural or religious prohibitions, or provider biases, misconceptions, or method promotion) might have been more influential.

Alternatively, the study might have failed to measure the critical components of contraceptive knowledge that determine contraception use. Limited evidence suggests that knowledge of the effectiveness of contraceptive methods might be a key determinant of use. In a previous study, reproductive-age women in Kingston reported that method effectiveness was the most important factor when choosing a contraceptive method (Steiner et al. 2006). Furthermore, participants in the Contraceptive CHOICE Project who used IUD or implants appeared to have a better understanding of the effectiveness of their selected method compared to users of other methods (Eisenberg et al. 2012). Finally, women in Vietnam who used the IUD were more likely than non-users to correctly identify the IUD's high relative effectiveness (Gallo et al. 2019). While our set of seven questions in the present analysis included questions on the relative effectiveness of different methods, an evaluation that focused on knowledge of method effectiveness specifically might have yielded different conclusions about the role of this type of knowledge.

Study findings are limited in that we studied a convenience sample of women attending a single large public clinic in Kingston; findings might not be generalizable to wider populations. Also, the cross-sectional nature of the study precludes any determinations of causality. On the other hand, the study benefited from the inclusion of questions on a wide range of contraceptive-related knowledge, attitudes, and practices. Furthermore, the questionnaire was administered at enrollment before the introduction of any intervention or study procedures that could have affected women's knowledge or reporting of behaviors. Future research should establish whether specific elements of contraceptive knowledge or misconceptions influence method use. In the absence of a better understanding of the importance of this knowledge, interventions designed to improve contraceptive knowledge might fail to be effective in changing behavior to reduce unintended pregnancy.

## Availability of data and materials

The study dataset is available from the corresponding author following institutional approvals.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by the Society of Family Planning Research Fund [SFPRF11-04]; National Center for Advancing Translational Sciences [UL1TR001070].

## References

- American College of Obstetricians and Gynecologists (ACOG), Committee on Adolescent Health Care. 2017. Committee opinion no. 710: Counseling adolescents about contraception. *Obstetrics and Gynecology* 130 (2):e74–e80. doi:10.1097/AOG.0000000000002234.
- Curtis, K. M., N. K. Tepper, T. C. Jatlaoui, E. Berry-Bibee, L. G. Horton, L. B. Zapata, K. B. Simmons, H. P. Pagano, D. J. Jamieson, and M. K. Whiteman. 2016. U.S. Medical eligibility criteria for contraceptive use, 2016. *Morbidity and Mortality Weekly Report* 65 (No. RR–3):1–104. doi:10.15585/mmwr.rr6503a1.
- Daniele, M. A. S., J. Cleland, L. Benova, and M. Ali. 2017. Provider and lay perspectives on intra-uterine contraception: A global review. *Reproductive Health* 14 (1):119. doi:10.1186/s12978-017-0380-8.

- Dewart, C. M., J. J. Serpico, M. J. Steiner, and M. F. Gallo. 2019. Electronic interventions for changing knowledge, attitudes, or practice regarding contraception: A systematic review. *Contraception* 100:10–25. doi: [10.1016/j.contraception.2019.04.00](https://doi.org/10.1016/j.contraception.2019.04.00).
- Diamond-Smith, N., M. Campbell, and S. Madan. 2012. Misinformation and fear of side-effects of family planning. *Culture, Health & Sexuality* 14 (4):421–33. doi:[10.1080/13691058.2012.664659](https://doi.org/10.1080/13691058.2012.664659).
- Eisenberg, D. L., G. M. Secura, T. E. Madden, J. E. Allsworth, Q. Zhao, and J. F. Peipert. 2012. Knowledge of contraceptive effectiveness. *American Journal of Obstetrics and Gynecology* 206 (6):479.e1–9. doi:[10.1016/j.ajog.2012.04.012](https://doi.org/10.1016/j.ajog.2012.04.012).
- Frost, J. J., D. L. Lindburg, and L. B. Finer. 2012. Young adults' contraceptive knowledge, norms and attitudes: Associations with risk of unintended pregnancy. *Perspectives on Sexual and Reproductive Health* 44 (2):107–16. doi:[10.1363/4410712](https://doi.org/10.1363/4410712).
- Gallo, M. F., N. Nguyen, C. Nguyen, and M. J. Steiner. 2019. Knowledge of contraceptive effectiveness and method use among women in Hanoi, Vietnam. *Contraception X* 1:100009. doi:[10.1016/j.conx.2019.100009](https://doi.org/10.1016/j.conx.2019.100009).
- Grimes, D. A., and K. F. Schulz. 2011. Nonspecific side effects of oral contraceptives: Nocebo or noise? *Contraception* 83 (1):5–9. doi:[10.1016/j.contraception.2010.06.010](https://doi.org/10.1016/j.contraception.2010.06.010).
- Guzzo, K. B., and S. R. Hayford. 2018. Adolescent reproductive and contraceptive knowledge and attitudes and adult contraceptive behavior. *Maternal and Child Health Journal* 22 (1):32–40. doi:[10.1007/s10995-017-2351-7](https://doi.org/10.1007/s10995-017-2351-7).
- Harper, C. C., J. T. Henderson, T. R. Raine, S. Goodman, P. D. Darney, K. M. Thompson, C. Dehlendorf, and J. J. Speidel. 2012. Evidence-based IUD practice: Family physicians and obstetrician-gynecologists. *Family Medicine* 44:637–45.
- Harris, P. A., R. Taylor, R. Thielke, J. Payne, N. Gonzalez, and J. G. Conde. 2009. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics* 42 (2):377–81. doi:[10.1016/j.jbi.2008.08.010](https://doi.org/10.1016/j.jbi.2008.08.010).
- Haynes, M. C., N. Ryan, M. Saleh, A. F. Winkel, and V. Ades. 2017. Contraceptive knowledge assessment: Validity and reliability of a novel contraceptive research tool. *Contraception* 95 (2):190–97. doi:[10.1016/j.contraception.2016.09.002](https://doi.org/10.1016/j.contraception.2016.09.002).
- Hosmer, D., S. Lemeshow, and R. Sturdivant. 2013. Model building strategies and methods for logistic regression. In *Applied logistic regression*, ed. Noel A. C. Cressie, N. I. Fisher, I. M. Johnstone, J. B. Kadane, D. W. Scott, B. W. Silverman, 91–142. Hoboken, New Jersey: Wiley.
- Howatt, K., A. Binette, J. Pudwell, and A. Waddington. 2019. Improving physician knowledge: A necessary but not sufficient requirement of improving intrauterine contraception access in Canada. *Journal of Obstetrics and Gynaecology Canada* 65:S66–S72. doi:[10.1016/j.jogc.2018.11.005](https://doi.org/10.1016/j.jogc.2018.11.005).
- Jamaica Ministry of Health. 2015. Implementation matrix of national integrated strategic plan for sexual and reproductive health & HIV, 2014–2019. <https://www.moh.gov.jm/wp-content/uploads/2016/05/Final-Integrated-SRH-NISP-Matrix-with-SRH-Validation.pdf>
- Jamaica National Family Planning Board. The Monthly Clinic Summary Report, 2014–2015.
- Luchowski, A. T., B. L. Anderson, M. L. Power, G. B. Raglan, E. Espey, and J. Schulkin. 2014. Obstetrician-gynecologists and contraception: Practice and opinions about the use of IUDs in nulliparous women, adolescents and other patient populations. *Contraception* 89 (6):572–77. doi:[10.1016/j.contraception.2014.02.008](https://doi.org/10.1016/j.contraception.2014.02.008).
- Machiyama, K., F. A. Huda, F. Ahmmed, G. Odwe, F. Obare, J. N. Mumah, M. Wamukoya, J. B. Casterline, and J. Cleland. 2018. Women's attitudes and beliefs towards specific contraceptive methods in Bangladesh and Kenya. *Reproductive Health* 15 (1):75. doi:[10.1186/s12978-018-0514-7](https://doi.org/10.1186/s12978-018-0514-7).
- Ochako, R., M. Mbondo, S. Aloo, S. Kaimenyi, R. Thompson, M. Temmerman, and M. Kays. 2015. Barriers to modern contraceptive methods uptake among young women in Kenya: A qualitative study. *BMC Public Health* 15:118. doi:[10.1186/s12889-015-1483-1](https://doi.org/10.1186/s12889-015-1483-1).
- Oringanje, C., M. M. Meremikwu, H. Eko, E. Esu, A. Meremikwu, and J. E. Ehiri. 2016. Interventions for preventing unintended pregnancies among adolescents. *Cochrane Database of Systematic Reviews* 2:CD005215. doi:[10.1002/14651858.CD005215.pub3](https://doi.org/10.1002/14651858.CD005215.pub3).
- Polis, C. B., R. Hussain, and A. Berry. 2018. There might be blood: A scoping review on women's responses to contraceptive-induced menstrual bleeding changes. *Reproductive Health* 15 (1):114. doi:[10.1186/s12978-018-0561-0](https://doi.org/10.1186/s12978-018-0561-0).
- Rosenfeld, E., L. S. Callegari, F. E. Sileanu, X. Zhao, E. B. Schwarz, M. K. Mor, and S. Borrero. 2017. Racial and ethnic disparities in contraceptive knowledge among women veterans in the ECUUN study. *Contraception* 96 (1):54–61. doi:[10.1016/j.contraception.2017.03.008](https://doi.org/10.1016/j.contraception.2017.03.008).
- Serbanescu, F., A. Ruiz, and R. Suchdev. 2010. *Reproductive health survey: Jamaica, 2008*. Kingston, Jamaica: National Family Planning Board, Statistical Institute of Jamaica, United States Agency for International Development, Centers for Disease Control and Prevention.
- Stanback, J., M. Steiner, L. Dorflinger, J. Solo, and W. Cates. 2015. WHO tiered-effectiveness counseling is rights-based family planning. *Global Health: Science and Practice* 3 (3):352–57. doi:[10.9745/GHSP-D-15-0009](https://doi.org/10.9745/GHSP-D-15-0009).
- Stanwood, N. L., and K. A. Bradley. 2006. Young pregnant women's knowledge of modern intrauterine devices. *Obstetrics and Gynecology* 108 (6):1417–22. doi:[10.1097/01.AOG.0000245447.56585.a0](https://doi.org/10.1097/01.AOG.0000245447.56585.a0).
- Steiner, M. J., J. Trussell, N. Mehta, S. Condon, S. Subramaniam, and D. Bourne. 2006. Communicating contraceptive effectiveness: A randomized controlled trial to inform a World Health Organization family planning handbook. *American Journal of Obstetrics and Gynecology* 195 (1):85–91. doi:[10.1016/j.ajog.2005.12.053](https://doi.org/10.1016/j.ajog.2005.12.053).