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Assessment of Contraceptive Use in Puerto Rico during the 2016 Zika Virus Outbreak

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Abstract

Objectives—The objectives of this analysis were to 1) estimate prevalence of contraceptive use among women at risk for unintended pregnancy and 2) identify correlates of contraceptive use among women with ongoing or potential need for contraceptive services in Puerto Rico during the 2016 Zika virus (ZIKV) outbreak.

Study Design—We conducted a cell-phone survey July–November, 2016. Women aged 18–49 years living in Puerto Rico were eligible. We completed 3,059 interviews; the overall response rate was 69.2%. After weighting, the data provide population-based estimates. For this analysis, we included women at risk for unintended pregnancy, and assessed ongoing or potential need for contraceptive services in this group, excluding women using permanent contraceptive methods.

Results—Most women reported using contraception (82.8%), and use increased with age. Female sterilization and male condoms were most frequently reported (40.8% and 17.1%, respectively). Among women with ongoing or potential need for contraceptive services, 24.7% talked to a healthcare provider about ZIKV, and 31.2% reported a change in childbearing intentions due to ZIKV. Most women were at least a little worried about getting infected with ZIKV (74.3%) or having a baby with a birth defect (80.9%). Being very worried about getting infected with ZIKV and already having Zika were significantly associated with use of any

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contraception (adjusted prevalence ratio: 1.19, 95% CI: 1.03–1.38 and 1.32, 95% CI: 1.01–1.72, respectively).

Conclusions—These findings underscore the need for regular contraceptive prevalence studies to inform programs about contraceptive needs, especially during public health emergencies.

Implications: When the 2016 Zika virus outbreak began in Puerto Rico there were no recent population-based data available on contraceptive prevalence. To fill this information gap, we conducted a population-based survey. Our findings provided baseline contraceptive prevalence estimates to support response planning and allocation of health resources.

Introduction

The Puerto Rico Department of Health (PRDH) reported the first locally acquired infection with Zika virus (ZIKV) on December 31, 2015 [1]. Reported cases remained low until April 2016 and then quickly increased, peaking in August 2016. Among states and territories in the United States, Puerto Rico was the most severely affected by the ZIKV outbreak [2-4]. ZIKV infection during pregnancy can result in severe birth defects including microcephaly and structural abnormalities of the brain and eye [5-13]. In 2016, before we understood the range of brain and eye defects that could be caused by ZIKV infection during pregnancy, it was estimated that 5,900 to 10,300 pregnant women would be infected during the initial ZIKV outbreak in Puerto Rico. As a result, an estimated 100 to 270 infants would be born with microcephaly in the absence of prevention measures [14]. As in the continental United States, abortion is legally permitted in Puerto Rico [15].

Because neither a vaccine nor prophylactic medication is available to prevent ZIKV infection, effective contraception for women who want to avoid pregnancy is a key countermeasure for preventing ZIKV-associated fetal and infant outcomes in areas with ZIKV. In 2016, the Centers for Disease Control and Prevention (CDC) recommended that women of reproductive age who have had or anticipate ZIKV exposure and who do not want to become pregnant should use the most effective contraceptive method that can be used correctly and consistently. Healthcare providers should counsel women accordingly [16].

The 2016 ZIKV outbreak in Puerto Rico prompted an examination of contraceptive access and use. To understand access issues, Tepper et al. carried out an assessment using key informant interviews during the first few months of the outbreak. Key informants reported limited access to long-acting reversible contraceptive (LARC) methods due to lack of availability, inadequate training and reimbursement of providers, incomplete insurance coverage, and high costs [3]. In addition to access issues, there was insufficient understanding about the prevalence of contraceptive use, which had last been measured during the 2002 Behavioral Risk Factor Surveillance System (BRFSS) survey [17]. To address this information gap, the PRDH and CDC conducted a population-based survey in 2016 among women of reproductive age (18–49 years) residing in Puerto Rico to collect information on contraceptive use and ZIKV-related attitudes and prevention behaviors. The objectives of this analysis were to 1) estimate the prevalence of contraceptive use among women at risk for unintended pregnancy and 2) identify correlates of contraceptive use among women with ongoing or potential need for contraceptive services in Puerto Rico.

Methods

2.1 Data Collection

We conducted a cell phone survey from July–November, 2016. The survey consisted of 48 questions covering ZIKV-prevention behaviors, contraception, and childbearing. All survey questions underwent cognitive testing with the intended population before implementation. The survey was available in Spanish and English and predominantly completed in Spanish (>99%).

Random samples of Puerto Rico cell phone numbers were purchased from Marketing Systems Group, Inc., for the survey. Interviewers called sampled cell phone numbers repeatedly until someone answered the phone or until the number was tried at least six times. Days of the week and times of day were varied, including evening and weekend calls. The survey was administered in WINCATI, a computer-assisted telephone interview software.

2.2 Ethics

After reading a brief script describing the survey, interviewers obtained verbal consent from respondents before proceeding. The CDC determined the survey to be a non-research, public health practice activity during an emergency response [18].

2.3 Measures

To determine contraceptive use prevalence, women were asked what they or their partners were currently doing to prevent pregnancy. Typical-use effectiveness of contraceptive methods is classified according to the estimated percentage of users who experience pregnancy during the first year of typical use: most effective (<1%), moderately effective (4%–7%), and less effective (>13%) [19]. We calculated prevalence of the following most effective methods separately: female sterilization, male sterilization, and long-acting reversible contraception (LARC) (intrauterine devices [IUDs] and contraceptive implants). Moderately effective contraceptive methods were combined and included hormone injections, contraceptive pills, transdermal contraceptive patches, and vaginal rings. Prevalence of male condoms as a primary contraceptive method was calculated separately, and other less effective methods were combined: diaphragm, female condoms, cervical cap, sponge, withdrawal, spermicide, fertility awareness-based methods, and emergency contraception. Among women who reported using more than one contraceptive method, the most effective method reported was used for classification.

The following factors were examined to determine their association with contraceptive use among women with ongoing need: 1) having had a discussion with a healthcare provider about ZIKV (yes/no), 2) being unable to visit a health care provider for contraceptive services in the past 12 months (yes/no), 3) having had a change in childbearing intentions due to ZIKV (yes/no), 4) degree of worry about being infected with ZIKV, and 5) degree of worry about having a baby with a birth defect.

We included the following covariates in our analysis: age (18–24 years, 25–34 years, 35–49 years); education (less than high school, high school graduate, more than high school); health insurance (private, Medicaid/public, no insurance); relationship status (married/long-term relationship with a man, married/long-term relationship with a woman, divorced/widowed/separated, never married and not in a long-term relationship); and having a previous pregnancy (yes/no).

2.4 Participants

To be eligible for the survey, women had to be aged 18–49 and living in Puerto Rico at the time of the interview. For overall contraceptive prevalence estimates, the sample was limited to women at risk for unintended pregnancy, defined as sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile. To assess factors associated with any contraceptive use, we excluded women using permanent contraceptive methods (defined as female and male sterilization).

2.5 Weighting

To produce estimates that were representative of the population, the data were weighted using raking methodology [20]. The raking margins used were based on population estimates available by age and sex from the U.S. Census Bureau's American Community Survey in Puerto Rico for 2015 [21]. The data were raked to the population estimates for women aged 18 to 49 using seven age categories (18–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49) and five marital status categories (married, separated, divorced, widowed, never married).

2.6 Data Analysis

Cooperation and response rates were calculated using standards set by the American Association of Public Opinion Research. The cooperation rate is the percentage of contacted and eligible participants who completed the survey. The response rate is calculated using completed interviews in the numerator and an estimate of all eligible participants in the denominator. The response rate calculation assumes that unresolved cell phone numbers contain the same percentage of eligible participants as the cell phone numbers for which eligibility or ineligibility were determined [22].

Weighted prevalence estimates and 95% confidence intervals (CIs) were calculated for overall contraceptive use among women at risk for unintended pregnancy and by contraceptive method type and age. For women at risk for unintended pregnancy who were not using contraception, we collected the primary reason for non-use. Bivariate analyses were conducted to examine prevalence of any contraceptive use among women with ongoing need by factors of interest and demographic characteristics, using the Rao-Scott chi-square test. We estimated prevalence ratios from log-binomial regression models to examine the association between each factor and any contraception use, controlling for age, education, health insurance, relationship status, and previous pregnancy. All data analyses

were conducted in SAS version 9.4, using weighted survey methods to account for sampling weights.

Results

As shown in the Figure, a total of 38,701 cell phone numbers were sampled, and 16,311 calls were answered. Of the calls answered, 3,169 respondents met eligibility criteria, and of those, 3,059 agreed to participate (cooperation rate = 96.5% and overall response rate 69.2%). An estimated 58.0% (95% CI: 56.1%–59.9%) of women aged 18–49 were at risk for unintended pregnancy at the time of the survey (Table 1).

Most women at risk for unintended pregnancy reported using contraception (82.8%, 95% CI: 81.0%–84.7%), and use of contraception increased with age (Table 2). Female sterilization was the most frequently reported contraceptive method overall (40.8%, 95% CI: 38.5%–43.1%) and among women aged 25–34 and 35–49. Male condoms were the second most frequently reported contraceptive method overall (17.1%, 95% CI: 15.2%–19.0%) and the most frequently reported method for women aged 18–24 (37.5%, 95% CI: 31.8%–43.3%). Overall, 9.1% (95% CI: 7.7%–10.5%) of women reported using a moderately effective contraceptive method (pills, patch, shot, or ring), and this proportion was highest among women aged 18–24 (16.7%) (Table 2). Among all moderately effective methods, the pill was the most frequently reported (7.9%, 95% CI: 6.6%–9.2%, data not shown). Male partner sterilization was reported by 6.7% (95% CI: 5.6%–7.9%) of women at risk for unintended pregnancy and by less than 1% of women aged 18–24. LARC methods were reported by 3.9%, (95% CI: 3.0%–4.8%) of women. The only LARC methods reported were copper and hormonal IUDs; no women reported using a contraceptive implant. Among the estimated 453,223 women in Puerto Rico at risk for unintended pregnancy, an estimated 179,084 (39.6%, 95% CI: 37.2%–41.9%) were using a less effective or no method (data not shown).

Among women at risk for unintended pregnancy who were not using a contraceptive method when interviewed, 50.8% did not specify why. The next most frequently reported reasons were that they didn’t think about it/forgot (22.6%) or they did not currently have a male sex partner/were not sexually active (10.1%) (Table 3).

Among women with ongoing or potential need for contraceptive services, 67.3% reported using any contraceptive method (Table 4). Women with private health insurance were more likely to use contraception, and women who reported a previous pregnancy were less likely to use contraception. Approximately one-quarter (24.7%) of women had ever talked to a healthcare provider about ZIKV, and 31.2% of women reported a change in childbearing intentions due to ZIKV; these factors did not differ for women using versus not using contraception. Most women were at least a little worried about getting infected with ZIKV (74.3%) and 4.3% reported they already had Zika. Most women also reporting being at least a little worried about having a baby with a birth defect (80.9%), and this did not differ by contraception use status. Women who reported being unable to visit a healthcare provider for contraception in the past 12 months were significantly less likely to use contraception (20.7% vs 14.5%, p=0.03) (Table 4).

Table 5 shows the results of the multivariable log-binomial regression modeling of factors associated with any use of contraception among women with potential or ongoing need for contraception. Being very worried about getting infected with ZIKV (adjusted prevalence ratio (APR): 1.19, 95% CI: 1.03–1.38) or reporting already having Zika (APR: 1.32, 95% CI 1.01–1.72) were the only factors significantly associated with any contraception use compared to not being worried. Women who were unable to visit a provider in the last 12 months for contraception were less likely to use any contraception, but this association was not statistically significant (APR: 0.90, 95% CI: 0.78-1.05).

Discussion

The ZIKV outbreak in Puerto Rico highlighted the need for up-to-date data on contraception use during a public health emergency. We leveraged the BRFSS platform in Puerto Rico to rapidly collect data needed for response planning. We found that while most women reported use of a contraceptive method, nearly 2 in 5 used either a less effective or no method of contraception when interviewed in mid-late 2016, which coincided with the peak of the ZIKV outbreak. LARC use was reported by 4% of women, substantially less than the estimated 14% of women in the 50 U.S. states using a LARC method [23]. Additionally, no women in the survey reported using a contraceptive implant.

In adjusted analysis of women with ongoing or potential need for contraceptive services, women who were very worried about getting infected with ZIKV and women who already had Zika were 19% and 32% more likely to use any contraception compared to women who were not worried, respectively. Additionally, women who were not able to visit a provider in the last 12 months for contraception were 10% less likely to use any contraception, but this association was not statistically significant.

In the 2002 BRFSS survey, 84% of women aged 18–44 at risk for unintended pregnancy in Puerto Rico were using a contraceptive method, and among contraceptive users, the most common methods were female sterilization, pill, condoms, and the rhythm method [17]. Our 2016 survey resulted in a similar prevalence of any contraception use among women aged 18–49 (83%) with female sterilization, male condom, moderately effective methods, and male sterilization as the most common methods reported.

To our knowledge, this is the only population-based survey among women of reproductive age that collected data on contraceptive prevalence and ZIKV and attitudes in Puerto Rico during the 2016 ZIKV outbreak. The analysis is strengthened by the large sample size and high response and cooperation rates. This analysis is also subject to several limitations. Data were self-reported and may be subject to social desirability bias and recall bias, particularly for reporting of highly sensitive questions, such as those about sexual experience and contraceptive use. We were unable to capture the primary reason for not using contraception for half of respondents who reported no contraceptive use because free text was not captured for this survey question. In addition, some data were contradictory, since 10% of women categorized as sexually active who were not using contraception said the reason was that they did not have a male partner or were not sexually active. Additionally, the data are cross-sectional, so it is not possible to establish a temporal relationship between the factors

examined and initiation of contraceptive method. Lastly, we were unable to collect data from adolescents younger than 18 who may be at increased risk for unintended pregnancy.

The findings from this analysis provide baseline contraceptive prevalence estimates to support reponse planning and allocation of health resources, especially for the Zika Contraception Access Network (Z-CAN) in Puerto Rico [3, 24]. Z-CAN was a network of trained physician providers that provided women with access to client-centered contraceptive counseling and a full range of contraceptive methods at no cost during the ZIKV outbreak in Puerto Rico. The program served more than 20,000 women, over two-thirds of whom chose a LARC method. The program launched in May 2016, but rollout was initially slow, and most women were served in 2017, after the peak of the ZIKV outbreak in Puerto Rico [24]. Ongoing contraceptive prevalence studies can help decision makers understand the magnitude of contraceptive use and identify gaps in contraceptive access, particularly during public health emergencies that impact pregnancy and pregnancy outcomes.

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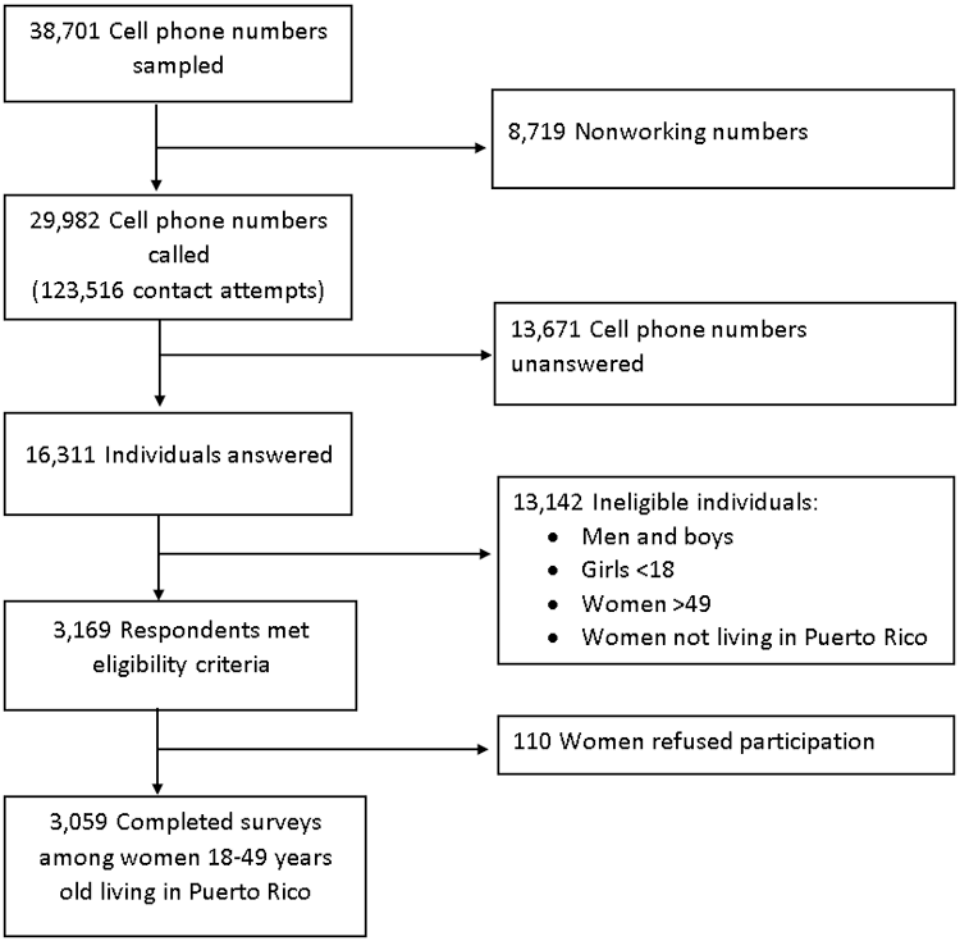

Figure.
Sampling outcomes for a reproductive health survey in Puerto Rico, 2016

Table 1.

Demographic characteristics of women age 18-49 completing a reproductive health survey during the Zika Virus Outbreak, Puerto Rico, 2016

	N (Unweighted)	% (Weighted)	95% CI
Overall	3,059	100.0	(–)
Age group			
18–24 years	586	23.1	(21.4–24.8)
25–34 years	1,026	30.3	(28.6–32.1)
35–49 years	1,447	46.6	(44.7–48.5)
Ethnicity [1]			
Hispanic/Latina	3,045	99.7	(99.5–99.9)
Non-Hispanic/Latina	11	0.3	(0.1–0.5)
Place of birth [2]			
Puerto Rico	2,757	90.5	(89.4–91.6)
Other (United States)	211	6.7	(5.7–7.6)
Other	90	2.8	(2.2–3.5)
Education [2]			
Less than high school	179	5.7	(4.8–6.5)
High school graduate	712	24.3	(22.6–25.9)
More than high school	2,167	70.1	(68.3–71.8)
Health insurance [3]			
Private/through employer	1,214	38.2	(36.4–40.1)
Medicaid or other public insurance	1,686	57.4	(55.5–59.3)
No insurance	129	4.4	(3.6–5.2)
Relationship status [4]			
Married/long-term relationship with a man	1,506	31.8	(30.2–33.3)
Married/long-term relationship with a woman	30	0.6	(0.4–0.8)
Divorced/Widowed/Separated	443	18.6	(17.0–20.3)
Never married and not in a long-term relationship	1,069	49.0	(47.0–51.9)
Municipality of residence [5]			
Aguadilla	183	5.9	(5.0–6.8)
Arecibo	353	11.6	(10.4–12.9)
Bayamon	523	17.0	(15.6–18.4)
Caguas	546	17.4	(16.0–18.9)
Fajardo	99	3.3	(2.6–4.0)
Mayaguez	206	6.5	(5.6–7.4)
Ponce	493	16.2	(14.8–17.6)
San Juan Metro	648	22.0	(20.4–23.6)
Not at risk for unintended pregnancy [6]	1,060	42.0	(40.1–43.9)
Never had sex	127	5.8	(4.9–6.8)

	N (Unweighted)	% (Weighted)	95% CI
Not sexually active/not in a long-term relationship[7]	857	36.3	(34.3–38.2)
Noncontraceptively sterile	97	3.0	(2.3–3.6)
Pregnant/ Seeking Pregnancy/Ambivalent	242	6.6	(5.7–7.4)
At risk for unintended pregnancy[8]	1,962	58.0	(56.1–59.9)

[1]Three missing responses.

[2]One missing response.

[3]Thirty missing responses.

[4]Eleven missing responses.

[5]Eight missing responses.

[6]37 Women could not be classified due to missing/refused responses. Some women reported multiple reasons for not at risk for unintended pregnancy; percentages sum to >100.

[7]Defined as not sexually active in the last 3 months and not in a long-term relationship with a man.

[8]Defined as sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile.

Table 2.

Prevalence of contraceptive use by method type and age group among women aged 18-49 at risk for unintended pregnancy[1] during the 2016 Zika Virus Outbreak, Puerto Rico

	Overall Weighted N=453,223		18–24 years		25–34 years		35–49 years	
Contraceptive Method	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
Any Method	**82.8**	**(81.0–84.7)**	**68.1**	**(62.7–73.6)**	**80.6**	**(77.3–84.0)**	**91.0**	**(89.0–92.9)**
Female sterilization	40.8	(38.5–43.1)	4.2	(2.2–6.2)	35.1	(31.4–38.9)	61.2	(57.8–64.6)
Male sterilization	6.7	(5.6–7.9)	0.4	(0.0–1.2)	5.2	(3.4–6.9)	10.7	(8.6–12.8)
Intrauterine contraception[2]	3.9	(3.0–4.8)	4.7	(2.4–7.1)	5.7	(3.8–7.5)	2.2	(1.2–3.2)
Moderately effective methods[3]	9.1	(7.7–10.5)	16.7	(12.4–21.0)	10.7	(8.2–13.2)	4.4	(3.0–5.9)
Male condom	17.1	(15.2–19.0)	37.5	(31.8–43.3)	17.8	(14.5–21.0)	7.6	(5.6–9.5)
Other less effective methods[4]	5.3	(4.2–6.3)	4.6	(2.2–7.0)	6.2	(4.3–8.1)	4.9	(3.4–6.4)
None	17.2	(15.3–19.0)	31.9	(26.4–37.3)	19.4	(16.1–22.7)	9.0	(7.1–11.0)

[1] Defined as sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile.

[2] Intrauterine devices were the only reported long-acting reversible contraceptive method; no women reported use of the contraceptive implant.

[3] Includes pills, patch, ring, or injection.

[4] Includes rhythm/fertility–based awareness, withdrawal, female condom, and diaphragm.

Table 3 ––

Percentage distribution of primary reason for not using contraception among women aged 18-49 at risk for unintended pregnancy[1] by age group, during the 2016 Zika Virus Outbreak, Puerto Rico

	Respondent Age							
	All Ages		**18–24 years**		**25–34 years**		**35–49 years**	
Primary Reason for Not Using Contraception	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
Didn't think about it, forgot, or don't know	22.6	(17.3–27.9)	32.6	(22.3–42.9)	18.8	(11.0–26.5)	13.2	(4.5–21.9)
No male partner/ not sexually active	10.1	(6.2–14.0)	4.5	(0.0–9.1)	17.7	(9.7–25.6)	6.4	(0.0–13.0)
Don't think I can get pregnant	6.5	(3.6–9.4)	1.9	(0.0–4.7)	3.5	(0.0–7.2)	18.3	(9.1–27.4)
Worried about side effects	3.7	(1.3–6.1)	4.1	(0.0–8.3)	5.1	(0.6–9.7)	1.0	(0.0–3.0)
Partner objects	2.4	(0.6–4.1)	2.0	(0.0–5.0)	2.4	(0.0–5.3)	2.9	(0.0–6.1)
Was breastfeeding or recently postpartum	2.1	(0.8–3.5)	1.8	(0.0–3.8)	3.3	(0.6–5.9)	0.9	(0.0–2.7)
Can't pay for contraception	1.1	(0–2.4)	1.9	(0.0–4.8)	1.1	(0.0–2.6)	0.0	—
Religious reasons	0.7	(0–1.7)	0.0	—	1.2	(0.0–3.4)	1.0	(0.0–3.0)
Other	**50.8**	**(44.6–57.0)**	**51.2**	**(40.3–62.1)**	**47.0**	**(37.1–56.9)**	**56.3**	**(44.5–68.2)**

[1]Defined as sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile.

Table 4.

Use of any contraceptive method versus no method among women aged 18-49 with ongoing or potential need for contraceptive services[1], during the 2016 Zika Virus Outbreak, Puerto Rico

	Total Weighted N=238,179		Any Method N=160,402		No Method N=77,777		P–Value
Characteristic	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	
Total			**67.3**	**(64.1–70.6)**	**32.7**	**(29.4–35.9)**	
Age group							
18–24 years	36.9	(33.5–40.4)	36.5	(32.4–40.7)	37.8	(31.8–43.8)	0.93
25–34 years	38.4	(35.1–41.8)	38.6	(34.6–42.6)	38.1	(32.3–44.0)	
35–49 years	24.6	(21.7–27.5)	24.9	(21.3–28.5)	24.1	(19.2–29.0)	
Education							
Less than high school	4.2	(2.8–5.5)	3.6	(2.1–5.1)	5.3	(2.7–7.9)	0.14
High school graduate	21.9	(19.0–24.8)	20.4	(17.0–23.9)	24.9	(19.7–30.2)	
More than high school	73.9	(70.9–77.0)	76.0	(72.3–79.6)	69.7	(64.2–75.3)	
Health insurance							
Private/through employer	43.5	(40.1–47.0)	48.1	(43.8–52.3)	34.2	(28.5–39.8)	<0.01
Medicaid or other public insurance	51.0	(47.5–54.4)	46.3	(42.1–50.6)	60.5	(54.7–66.4)	
No insurance	5.5	(3.9–7.1)	5.6	(3.6–7.6)	5.3	(2.6–8.0)	
Relationship status							
Married/long-term relationship with a man	32.3	(29.4–35.1)	32.1	(28.7–35.6)	32.6	(27.5–37.5)	0.65
Divorced/Widowed/Separated	10.1	(7.9–12.4)	10.8	(7.8–13.6)	8.8	(5.2–12.3)	
Never married and not in a long-term relationship	57.6	(54.3–60.9)	57.1	(53.1–61.1)	58.7	(53.1–64.4)	
Ever been pregnant							
Yes	54.9	(51.4–58.3)	51.8	(47.6–56.1)	61.1	(55.1–67.1)	0.01
No	45.1	(41.7–48.6)	48.2	(43.9–52.4)	38.9	(32.9–44.9)	
Talked to a healthcare provider about Zika							
Yes	24.7	(21.8–27.6)	26.0	(22.4–29.6)	22.1	(17.3–26.9)	0.21
No	75.3	(72.4–78.2)	74.0	(70.4–77.6)	77.9	(73.1–82.7)	
Unable to see a provider in the last 12 months for contraception							
Yes	16.5	(13.9–19.1)	14.5	(11.5–17.5)	20.7	(15.7–25.6)	0.03
No	83.5	(80.9–86.1)	85.5	(82.5–88.5)	79.3	(74.4–84.3)	

	Total Weighted N=238,179		Any Method N=160,402		No Method N=77,777		P–Value
Characteristic	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	
Reported a change in childbearing intentions due to Zika							
Yes	31.2	(28.1–34.4)	29.9	(26.1–33.7)	33.9	(28.2–39.6)	0.25
No	68.8	(65.6–71.9)	70.1	(66.3–73.9)	66.1	(60.4–71.8)	
Worried about getting infected with Zika							
Very worried	27.6	(24.6–30.7)	28.5	(24.7–32.3)	25.8	(20.7–31.0)	0.15
A little/somewhat worried	46.7	(43.3–50.2)	47.8	(43.5.52.0)	44.5	(38.5–50.6)	
Already had Zika	4.3	(3.0–5.6)	4.6	(3.0–6.3)	3.6	(1.4–5.9)	
Not worried	21.3	(18.5–24.2)	19.1	(15.7–22.5)	26.0	(20.6–31.3)	
Worried about having a baby with a birth defect							
Very worried	68.7	(65.5–72.0)	68.9	(64.9–72.8)	68.4	(62.7–74.1)	0.99
A little/somewhat worried	12.2	(9.9–14.5)	12.1	(9.4–14.9)	12.5	(8.3–16.6)	
Not worried	19.1	(16.3–21.8)	19.0	(15.6–22.4)	19.2	(14.3–24.0)	

[1] Defined as women at risk for unintended pregnancy [sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile] And Excludes women who reported a permanent contraceptive method.

Table 5.

Factors associated with use of any contraception among women aged 18-49 with ongoing or potential need for contraceptive services[1], during the 2016 Zika Virus Outbreak, Puerto Rico

	Crude Prevalence Ratio	Adjusted Prevalence Ratio[2]	
Covariates	**Estimate**	**Estimate**	**95% CI**
Talked to a healthcare provider about Zika			
Yes	1.07	1.04	(0.94–1.16)
No	Ref	ref	—
Unable to see a provider in the last 12 months for contraception			
Yes	0.86	0.90	(0.78–1.05)
No	ref	ref	—
Reported a change in childbearing intentions due to Zika			
Yes	0.94	0.92	(0.83–1.04)
No	ref	ref	—
Worried about getting infected with Zika			
Very worried	1.15	**1.19**	**(1.03–1.38)**
A little/somewhat worried	1.14	1.11	(0.96–1.27)
Already had Zika	1.32	**1.32**	**(1.01–1.72)**
Not worried	ref	ref	—
Worried about having a baby with a birth defect			
Very worried	1.00	1.01	(0.88–1.14)
A little/somewhat worried	0.99	1.02	(0.87–1.21)
Not worried	ref	ref	—

[1] Defined as women at risk for unintended pregnancy [sexually active women (reporting sex with a man in the last 3 months or reporting being married or in a long-term relationship with a man), excluding women who were currently pregnant, desiring or ambivalent about pregnancy, or noncontraceptively sterile] And Excludes women who reported a permanent contraceptive method.

[2] Adjusted for age group, education, health insurance, relationship status, and past pregnancy.