Reconsidering racial/ethnic differences in sterilization in the United States

Kari White and Joseph E. Potter

Abstract

Cross-sectional analyses of women's current contraceptive use demonstrate that low-income and racial/ethnic minority women are more likely to use female sterilization and less likely to rely on a partner's vasectomy than women with higher incomes and whites. This has prompted concern that providers may be promoting sterilization in these groups. Using the 2006-2010 National Survey of Family Growth, we fit logistic and Cox regression models to estimate women's risk of getting a postpartum and interval sterilization. Women with Medicaid-paid deliveries had a somewhat higher risk of getting a postpartum and interval female sterilization than women with private insurance. However, among women with Medicaid, whites were more likely to use female sterilization than African Americans and Latinas. These results suggest that low-income minority women face unique barriers to obtaining permanent contraception, and that cross-sectional results may be biased by differences in exposure to repeated unintended pregnancies.

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Introduction

In the United States (US), 37% of reproductive aged women using contraception rely on a permanent method (Mosher and Jones 2010), but the percentage of women using female sterilization and vasectomy varies across groups. African Americans and Latinas and low-income women are more likely to use female sterilization than whites and women with higher incomes, even after controlling for other sociodemographic characteristics (Borrero, Schwarz et al. 2007; Borrero, Schwarz et al. 2009). In contrast, vasectomy is more common among whites and those with higher incomes compared to racial/ethnic minorities and low-income groups (Eisenberg, Henderson et al. 2009; Anderson, Jamieson et al. 2012). These differences have prompted concern that providers may be promoting female sterilization among low-income and minority women or that other factors, such as inconsistent insurance coverage and partner attitudes, may constrain women's contraceptive choices (Borrero, Schwarz et al. 2007; Borrero, Schwarz et al. 2009).

However, several local studies have found that racial/ethnic minority and low-income women experience barriers accessing female sterilization. African American and Latina women report their providers dissuaded them from getting a sterilization because they are seen as too young or having too few children (Zite, Wuellner et al. 2006; Borrero, Nikolajski et al. 2009; Potter, White et al. 2012). Low-income women also cite the Medicaid-eligibility requirements, such as signing a consent form 30 days in advance of the procedure, as barriers to obtaining a desired postpartum sterilization. As reported in one study, the inability to obtain a sterilization postpartum may result in subsequent unintended pregnancies (Thurman and Janecek 2010).

In this paper, we address the apparent contradiction between the greater prevalence of sterilization among minority women and the findings indicating that minority women, particularly

low-income minority women, face greater barriers in obtaining a sterilization than do white women and those with higher incomes. The approach we take is to examine a woman's risk of getting a sterilization following delivery. In contrast with a cross-sectional analysis, this metric focuses on comparable exposures, and effectively removes from the comparison across racial/ethnic groups any difference in the number of births a woman has experienced.

Methods

Data and study sample

For this study, we used data from the 2006-2010 cycle of the National Survey of Family Growth (NSFG). The NSFG is a nationally representative survey of reproductive aged women and men that is conducted at regular intervals by the National Center for Health Statistics. Using a multistage probability sample, women and men between the ages of 15 and 44 are selected to complete an in-person interview that collects information about their sociodemographic characteristics, pregnancy and partnership histories, and contraceptive use. African American and Latino respondents are oversampled. The 2006-2010 cycle of the survey included 12,279 women and 10,403 men.

The data for these analyses primarily come from the female pregnancy file. This dataset contains one record for each of the 20,497 pregnancies from sampled female respondents and has detailed information about each pregnancy, such as the dates when the pregnancy began and ended, pregnancy outcome, the woman's age and marital status at the end of the pregnancy, and select participant characteristics. Information on payment source for delivery is also available for live births that occurred within five years of survey date. The female respondent file included the dates of women's tubal ligation or partner's vasectomy. Together with the data from the pregnancy file, this information allowed us to determine the timing of the sterilization procedure relative to delivery.

We initially restricted our sample to pregnancies ending in live births within five years of the interview date, since payment source for delivery was not collected for earlier pregnancies. We further restricted the sample to second or higher order births since sterilization among primiparous women is uncommon (Mosher and Jones 2010). Women whose delivery was not paid by Medicaid or private insurance were excluded due to the small sample size. We also omitted observations with illogical dates (e.g., a woman obtained a female sterilization while she was still pregnant). This resulted in a final analytic sample of 2,979 births to 2,393 women.

Study outcome

Our main outcome was obtaining a female sterilization or vasectomy. Sterilizations were further classified into postpartum and interval procedures. We identified postpartum female sterilizations as those which occurred in the same month and year as delivery; if a woman reported her male partner's vasectomy occurred in the months between conception and delivery, we classified this as a postpartum vasectomy. Sterilizations that occurred one month postpartum or later were considered interval procedures.

Statistical Analysis

As a first step in the analysis, we computed the frequency of births, postpartum and interval female sterilizations and vasectomies and, for the interval period, the number of person-months of exposure to the risk of obtaining a sterilization. We computed these frequencies by women's age, parity and educational attainment at the time of delivery, her race/ethnicity, and whether her delivery was paid by private insurance or Medicaid – our proxy for women's income level.

Next, we estimated multivariable adjusted logistic regression models to assess the association between the above covariates and obtaining any postpartum sterilization procedure and postpartum female sterilization only. Since previous analyses have revealed differences by

insurance in the proportion of minority women using sterilization compared with whites (Borrero, Schwarz et al. 2007), we also tested for interactions between race/ethnicity and payment source for delivery using likelihood ratio tests. We considered a p-value less than 0.10 to indicate the association between these factors differed for obtaining a sterilization. To facilitate the interpretation of the interaction between race/ethnicity and insurance, we estimated predicted probabilities for each combination of race/ethnicity and insurance, for women age 30-34years with two children and a high school diploma/some college.

For women who did not obtain a postpartum sterilization, we fit multivariable adjusted Cox models to compute hazard ratios and 95% confidence intervals for obtaining an interval procedure, using the same set of covariates as in the logistic model. Women's risk for obtaining a sterilization procedure began the month and year after she delivered a live born infant. Women who became pregnant again before obtaining a sterilization were censored at the time of conception and entered the risk set upon delivery of their next live birth. Women who did not obtain a female sterilization or whose partner had not gotten a vasectomy were censored on the date of the interview. For both models of obtaining any interval procedure and an interval female sterilization, we tested the proportional hazards assumption by creating interactions between analysis time and the covariates. The association of most covariates and both outcomes was similar across time. We also assessed the significance of including interactions for race/ethnicity and insurance using the likelihood ratio test. After fitting the models, we estimated the cumulative incidence of obtaining any interval sterilization and female sterilization in the 24 months following delivery. Similar to the logistic models, we estimated the cumulative incidence for each combination of race/ethnicity and insurance for women age 30-34years with two children and a high school diploma/some college.

As a final step in assessing how women's chances of obtaining a sterilization change over time, we computed cumulative probabilities obtaining any sterilization procedure and female sterilization only for each race/ethnicity and insurance combination up to 24 months

following delivery. These values were calculated by summing the estimated postpartum probability and the product of the interval cumulative incidence and the proportion who did not obtain a postpartum procedure at each time point. All analyses were conducted using Stata 11.0 (College Station, TX) and weighted to take into account the complex sampling design of the NSFG.

Institutional Review Board approval was not required for the analysis of this public use national data set.

Results

Among the 2,979 births that occurred in the five years prior to the survey, there were a total of 727 sterilizations (Table 1). Of these, 589 (81%) were female sterilizations and 138 (19%) were vasectomies. The majority of female sterilizations occurred immediately postpartum. Just under half (42%) of interval procedures were vasectomies. The distribution of vasectomies is extremely uneven across deliveries classified by the mother's level of education, race/ethnicity, and insurance status, with the majority of these procedures being reported by women with a college degree, who are white and have private insurance.

In assessing the association between women's characteristics and obtaining a postpartum sterilization, we focus on female sterilization only given the small number of vasectomies occurring in this period. Additionally, we present the models including the interactions for race/ethnicity and insurance, since the likelihood ratio tests were statistically significant for these models; results from the models without interactions are presented in Supplementary Table 1. Women age 24 years or younger have significantly lower odds of obtaining a female sterilization compared with women between ages 30 and 34 (Table 2, left column). Compared with women delivering their second child, women delivering a third or higher order birth are more likely to obtain a female sterilization (OR: 2.31 [95% CI: 1.61-3.31]).

Additionally, women with a college degree have lower odds of getting a female sterilization following delivery, compared with those who have high school/some college education.

As demonstrated in Table 2 and Figure 1a, the probability of obtaining a postpartum female sterilization varies by race/ethnicity and payment source for delivery. Among women whose delivery was paid by private insurance, Latina women were more likely to obtain a sterilization compared with whites, but there were no significant differences for African Americans and women of other races/ethnicities. In contrast, Latinas with Medicaid-paid deliveries were less likely to obtain a postpartum female sterilization compared with whites, who had the highest probability of postpartum sterilization; again, there were no significant differences for African Americans and women of other races/ethnicities after adjusting for the other covariates.

In the Cox models for interval procedures (Table 2, right columns), there was no association between age and risk of obtaining any sterilization procedure or female sterilization. Women with three or more children had higher hazard ratios for obtaining any sterilization and female sterilization compared with women who have 2 children. Although there was no significant difference in obtaining any sterilization in the interval period for women with a college degree compared with women who have high school/some college education (HR: 0.97 [95% CI: 0.65-1.45]), college educated women had a slightly lower risk of interval female sterilization (HR: 0.52 [95% CI: 0.26-1.04]), indicating their partners are somewhat more likely to get vasectomies.

Similar to the results for postpartum female sterilization, a woman's risk of obtaining an interval procedure varies according to both her race/ethnicity and payment source (Figure 1b). Among women with private insurance, African American and Latina women had lower risks of obtaining any interval sterilization compared with whites, but the association was only significant for Latina women. However, both African American and Latina women with Medicaid-paid deliveries were less likely than whites with Medicaid to have any interval sterilization procedure.

With respect to interval female sterilization, there were no significant racial/ethnic differences for women with private insurance. In contrast, African American and Latina women with Medicaid were both less likely than whites to obtain an interval female sterilization.

The cumulative probabilities of women obtaining a sterilization procedure from the time of delivery up through 24 months postpartum for each combination of race/ethnicity and insurance are presented in Figures 2a-2c. For all groups, the cumulative probability of obtaining a sterilization increases in the first three months following delivery, and then tends to remain stable over the next 21 months. White women with private insurance, for whom the total proportion obtaining any sterilization procedure gradually increases over this period, is the exception (Figure 2a). Although whites with Medicaid are more likely to obtain a sterilization following delivery compared with privately insured whites, by 24 months postpartum the differential between these groups is small (35% Medicaid, 28% private). In contrast, a higher proportion of African American and Latina women with private insurance than with Medicaid rely on sterilization by 24 months postpartum; however, the difference by insurance status is smaller for African American women (Figure 2b) than for Latinas (Figure 2c). Finally, regardless of race/ethnicity, the difference in the proportion of women obtaining any sterilization compared to female sterilization is small for women with Medicaid. The difference is also small for African Americans and Latinas, regardless of insurance, indicating the low probability of their male partners getting a vasectomy.

Discussion

Similar to other studies (Borrero, Schwarz et al. 2007), we found that women's use of sterilization varies by both race/ethnicity and insurance. However, by conducting an analysis that assessed a woman's risk that is specific to each birth (rather than each woman) we reach different conclusions about the association between race/ethnicity, insurance and sterilization. Our findings are consistent with smaller local studies reporting on unfulfilled sterilization

requests (Zite, Wuellner et al. 2005; Thurman, Harvey et al. 2009; Potter, White et al. 2012). Additionally, by examining women's probability of obtaining a sterilization in the months following delivery, we found that differences by race/ethnicity and insurance persist, possibly reflecting further barriers to access.

Among women with Medicaid-paid births, we observed lower rates of postpartum and interval female sterilization for both African American and Latina women compared with whites. This is different than findings reported previously, where there were no significant racial/ethnic differences among women with Medicaid (Borrero, Schwarz et al. 2007). It seems unlikely that this is due to different cultural preferences surrounding female sterilization given the higher rates observed among privately insured women in these same groups. Additionally, other studies have reported that African American women report their mothers and other female members of their social networks as important influences on their decision to get a tubal ligation (Borrero, Nikolajski et al. 2009; Borrero, Abebe et al. 2011). Further, there is a high prevalence of female sterilization in several of the main sending countries for Latino migrants such as Mexico (Palma Cabrera and Palma 2007), making it likely that Latina women would more inclined to prefer this method.

It is possible that these differences are due to variation in fertility intentions across groups and that low-income African American and Latina women are more likely than whites to want additional children. Previous studies comparing racial/ethnic differences in women's fertility intentions and outcomes have found that, early in life, the average number of intended children among African American and Latina women is slightly higher compared to whites (Morgan and Rackin 2010; Hartnett 2012). However, these studies also note that the stated differences between groups are small and that both African Americans and Latinas are more likely to have exceeded their desired number of children toward the end of their childbearing years due to unintended pregnancy.

Therefore, the differences in sterilization we observe instead could be due to barriers in access that have a greater impact on racial/ethnic minority women compared to whites, even at similar ages and parities. It may be that providers are more likely to discourage low-income minority women from obtaining a sterilization because they associate these characteristics with a higher likelihood of sterilization regret (Hillis, Marchbanks et al. 1999; Borrero, Nikolajski et al. 2009). In fact, a qualitative study of women's decision-making surrounding female sterilization found that low-income African American women more commonly reported their providers as barriers to getting a sterilization than whites (Borrero, Nikolajski et al. 2009). We also found that low-income Latina women were unable to obtain a sterilization because their providers considered them to be too young or having too few children (Potter, White et al. 2012). Based on our findings that assessed women's risk in the months following delivery, it appears that these barriers may affect whether African American and Latina women get a postpartum tubal ligation or interval sterilization.

Low-income Latina women in particular may face significant barriers to getting a sterilization, as evidenced by the fact that the probability of female sterilization was lowest in this group. This may not only be due to provider-level factors, as suggested above, but also health systems influences that limit their access to postpartum contraception, and sterilization in particular. For example, programs that cover the cost of pregnancy-related care and delivery for undocumented women, such as CHIP perinate and emergency Medicaid, often do not cover postpartum contraception (Thurman, Harvey et al. 2009). Additionally, these women are not eligible for Medicaid family planning waivers in most states due to the programs' residency requirements. As a result, low-income Latinas may more frequently rely on Title X clinics for services where sterilization is less widely available (Lindberg, Frost et al. 2006) because of limited financial resources and the method's higher upfront costs. In fact, two studies of low-income Latinas in Texas found that women were unable to get a sterilization due to lack of

funding at public family planning clinics where they receive care (Thurman, Harvey et al. 2009; Potter, White et al. 2012).

By assessing women's birth-specific risk of obtaining a sterilization, rather than her current contraceptive use, we were also able to identify key differences in both the timing and type of sterilization obtained. For women in all groups, we found that that the probability of obtaining a sterilization was highest in the month of delivery. The incidence of sterilization increased in the first three months postpartum and then changed little after this time. Although this pattern is perhaps not surprising given women's contact with the health care system and, for low income women, greater likelihood of being insured through the postpartum period, it suggests that women who do not obtain a sterilization in the initial months following delivery are unlikely to do so later on.

Additionally, our comparison of women's risk for obtaining any interval sterilization procedure and female sterilization only revealed differences in women's reliance on vasectomy, which also varied by race/ethnicity and insurance. Our results confirm findings reported elsewhere in the literature that this procedure is more common among higher income, more educated whites (Eisenberg, Henderson et al. 2009; Anderson, Jamieson et al. 2012). Like these studies, our results also raise questions about the potential reasons for these differences, such as preferences and access. Cultural beliefs, such as attitudes toward contraceptive responsibility and perceptions that vasectomy may reduce sexual desire and performance, have been suggested as possible reasons that African American and Latino men are less likely to get vasectomies (Borrero, Schwarz et al. 2009; Eisenberg, Henderson et al. 2009; Shih, Turok et al. 2011). However, there has been little recent research comparing attitudes toward vasectomy across racial/ethnic groups, making it difficult to determine whether this accounts for the observed differences. Moreover, the significantly lower rates of vasectomy among women with Medicaid, regardless of race/ethnicity, suggest additional barriers to obtaining the procedure among low-income groups. This may be because vasectomy is not reimbursable though

Medicaid in all states and less than half of publicly funded clinics report vasectomy is available at their site (Lindberg, Frost et al. 2006; James, Salganicoff et al. 2009), which in turn restricts the availability of this method to low-income groups.

Our study has several limitations. Since we assessed risk of obtaining a sterilization from the time of delivery, we had a limited set of covariates that we could meaningful use to assess differences between groups. Specifically, we do not have a measure of women's and her partner's future childbearing intentions at the time of birth, which would provide important information about whether she wanted to limit childbearing. Although measures of unintended pregnancy are available in the NSFG, these are reported retrospectively for the index birth, making it difficult to ascertain her subsequent childbearing intentions.

Furthermore, we do not know whether women who did not obtain a sterilization actually wanted the procedure since information on women's and men's contraceptive preferences is not available in the NSFG. Findings from several local studies indicate that there is significant unmet demand for female (and potentially male) sterilization (Zite, Wuellner et al. 2006; Thurman, Harvey et al. 2009; Potter, White et al. 2012; Shih, Dube et al. Forthcoming), suggesting there may be unmet demand for these procedures among reproductive aged women and men in the US overall. Additional research is needed to assess women and men's contraceptive preferences and evaluate whether they are able to realize their preferences.

Despite these limitations we have found that higher rates of female sterilization obtained from women's current use may not accurately reflect women's probability of obtaining a sterilization. Current use measures reflecting a higher prevalence of female sterilization among low-income and racial/ethnic minority women may be biased as a result of the greater risks these groups have for unintended pregnancy if they are unable to get a sterilization. Additional information is needed to further identify the range and extent of systems-level barriers on women and men's contraceptive use and how well current use reflects contraceptive preferences.

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Table 1. Distribution of births, postpartum and interval female sterilizations and vasectomies, and person-months of exposure among women delivering live born infants within five years of the survey date

	Births	Postpartum sterilizations		Interval sterilizations		
		Female sterilization	Vasectomy	Female sterilization	Vasectomy	Person-months of exposure
Age at delivery, years						
15 – 24	901	65	2	43	9	18,977
25 – 29	979	132	5	63	27	19,182
30 – 34	722	136	8	39	48	14,412
≥ 35	377	88	3	23	36	7,070
Parity at delivery						
2 children	1,494	120	3	56	64	33,658
3 children or more	1,485	301	15	112	56	25,983
Educational attainment at delivery						
Less than high school	915	127	3	54	2	17,300
High school diploma/some college	1,364	255	5	89	45	26,569
College degree	700	69	10	25	73	15,772
Race/ethnicity						
White	1,170	161	12	76	96	22,856
African American	710	101	1	40	6	13,798
Latina	889	131	4	41	11	18,828
Other	210	28	1	11	7	4,159
Payment for delivery						
Private insurance	1,234	158	13	69	109	26,458
Medicaid	1,745	263	5	99	11	33,183
TOTAL	**2,979**	**421**	**18**	**168**	**120**	**59,641**

Source: NSFG 2006-2010

Table 2. Multivariable adjusted Odds Ratios for postpartum sterilizations and Hazard Ratios for interval sterilizations

	Postpartum sterilizations[1]	Interval sterilizations[2]	
	Female sterilization	Any sterilization procedure	Female sterilization
Age at delivery, years			
15 - 24	0.33 (0.20 - 0.56)	0.86 (0.53 - 1.39)	0.84 (0.42 - 1.69)
25 - 29	0.64 (0.39 - 1.04)	1.01 (0.68 - 1.49)	1.09 (0.61 – 1.94)
30 - 34	1.00 (ref)	1.00 (ref)	1.00 (ref)
≥ 35	1.44 (0.91 - 2.28)	0.90 (0.57 - 1.41)	0.63 (0.28 - 1.44)
Parity at delivery			
2 children	1.00 (ref)	1.00 (ref)	1.00 (ref)
3 children or more	2.31 (1.61 - 3.31)	1.85 (1.32 - 2.61)	2.57 (1.56 - 4.23)
Educational attainment at delivery			
Less than high school	1.02 (0.61 - 1.71)	0.91 (0.53 – 1.57)	0.97 (0.58 – 1.63)
High school diploma/some college	1.00 (ref)	1.00 (ref)	1.00 (ref)
College degree	0.51 (0.31 - 0.85)	0.97 (0.65 - 1.45)	0.52 (0.26 - 1.04)
Race/ethnicity			
White	1.00 (ref)	1.00 (ref)	1.00 (ref)
African American	1.18 (0.57 - 2.48)	0.66 (0.34 - 1.31)	1.55 (0.64 - 3.78)
Latina	2.14 (1.08 - 4.26)	0.48 (0.26 - 0.90)	0.84 (0.36 – 1.94)
Other	0.79 (0.31 – 2.04)	0.81 (0.37 - 1.78)	2.20 (0.81 – 6.01)

Payment for delivery			
Private insurance	1.00 (ref)	1.00 (ref)	1.00 (ref)
Medicaid	2.34 (1.45 - 3.76)	0.86 (0.45 - 1.65)	1.89 (0.80 - 4.45)
Race/Ethnicity * Payment for delivery			
African American * Medicaid	0.56 (0.22 - 1.42)	0.48 (0.16 - 1.37)	0.21 (0.06 - 0.76)
Latina * Medicaid	0.20 (0.08 - 0.47)	0.60 (0.21 - 1.73)	0.36 (0.11 - 1.21)
Other * Medicaid	0.50 (0.13 - 1.83)	0.84 (0.25 - 2.81)	0.29 (0.07 - 1.12)

Source: NSFG 2006-2010

OR = Odds ratio; HR = Hazard ratio; CI = Confidence interval

1. Odds ratios obtained from logistic regression models.

2. Hazard ratios obtained from Cox models.

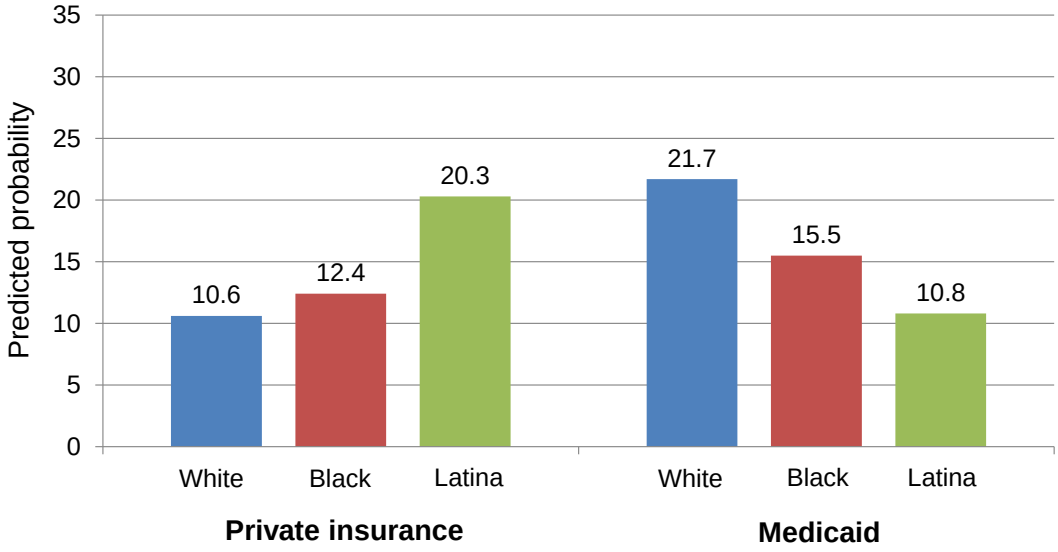

Figure 1a. Predicted probability of postpartum female sterilization, by race/ethnicity and insurance*

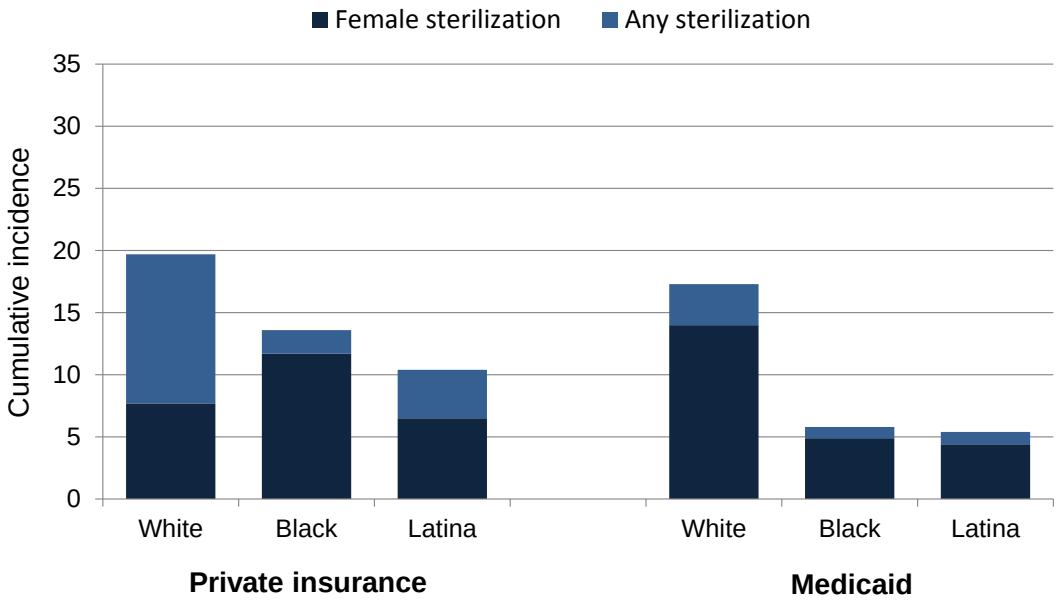

Figure 1b. Cumulative incidence of interval sterilization within 24 months postpartum by race/ethnicity and insurance†

*Predicted probabilities estimated from multivariable-adjusted logistic regression models (Table 2) for women age 30-34 with 2 children and high school/some college education.

† Cumulative incidence estimated from multivariable-adjusted Cox regression models (Table 2) for women age 30-34 with 2 children and high school/some college education.

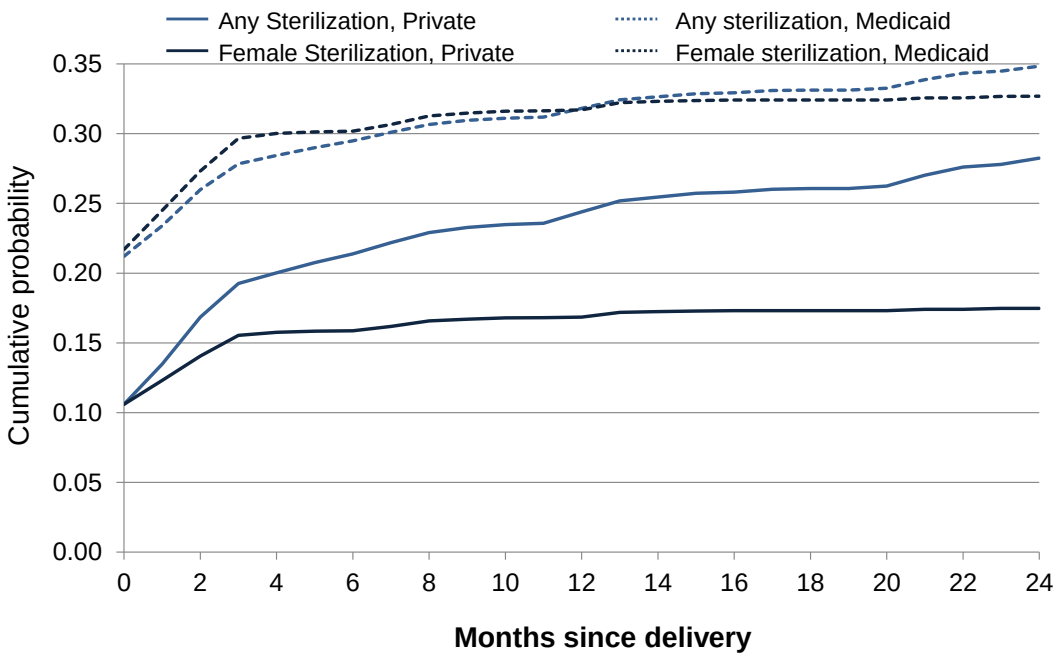

Figure 2a. Cumulative probability of sterilization within 24 months postpartum among whites

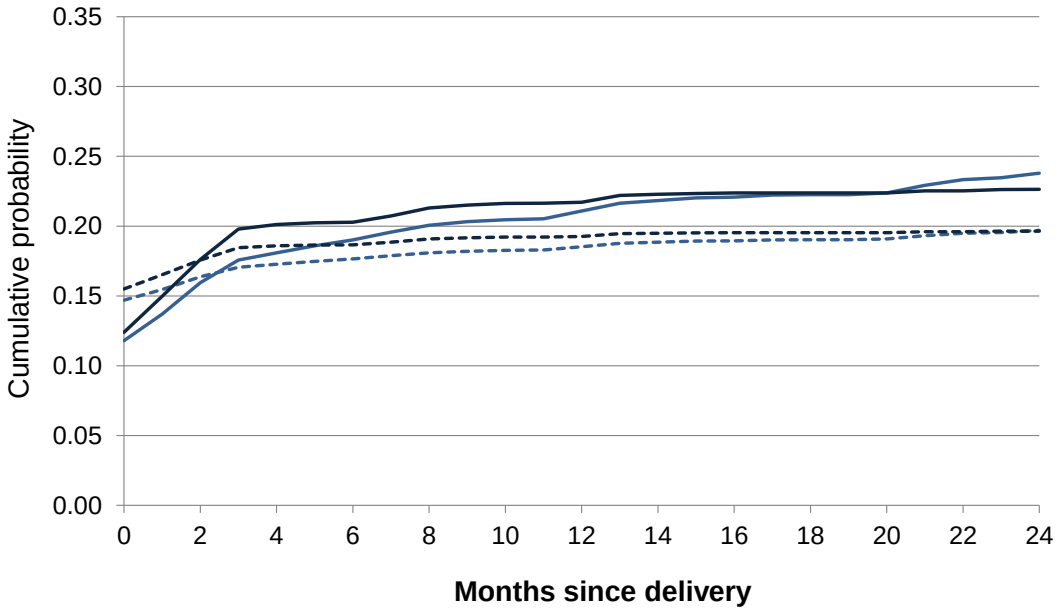

Figure 2b. Cumulative probability of sterilization within 24 months postpartum among African Americans

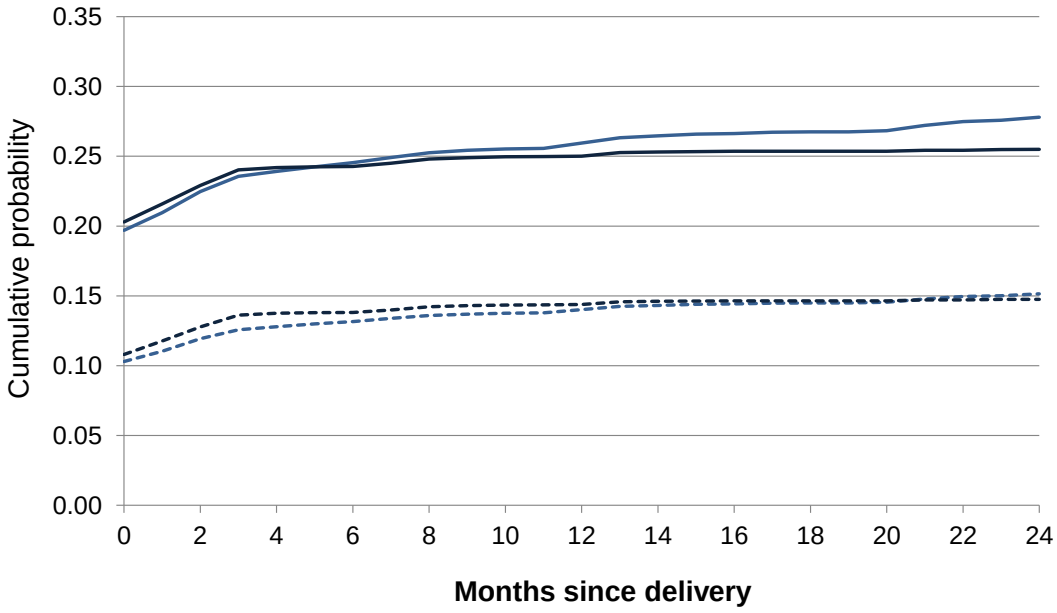

Figure 2c. Cumulative probability of sterilization within 24 months postpartum among Latinas

Supplementary Table 1. Multivariable adjusted Odds Ratios for postpartum sterilizations and Hazard Ratios for interval sterilizations

	Postpartum sterilizations[1]	Interval sterilizations[2]	
	Female sterilization	Any sterilization procedure	Female sterilization
Age at delivery, years			
15 - 24	0.37 (0.22 - 0.62)	0.87 (0.54 - 1.41)	0.84 (0.42 - 1.66)
25 - 29	0.66 (0.40 - 1.07)	1.00 (0.68 - 1.48)	1.04 (0.59 - 1.84)
30 - 34	1.00 (ref)	1.00 (ref)	1.00 (ref)
≥ 35	1.49 (0.94 - 2.35)	0.89 (0.57 - 1.39)	0.62 (0.27 - 1.43)
Parity at delivery			
2 children	1.00 (ref)	1.00 (ref)	1.00 (ref)
3 children or more	2.32 (1.63 - 3.31)	1.85 (1.33 - 2.59)	2.49 (1.50 - 4.11)
Educational attainment at delivery			
Less than high school	0.91 (0.54 - 1.54)	0.89 (0.52 - 1.54)	0.97 (0.57 - 1.65)
High school diploma/some college	1.00 (ref)	1.00 (ref)	1.00 (ref)
College degree	0.46 (0.28 - 0.76)	0.96 (0.64 - 1.43)	0.50 (0.25 - 0.99)
Race/ethnicity			
White	1.00 (ref)	1.00 (ref)	1.00 (ref)
African American	0.90 (0.59 - 1.36)	0.46 (0.26 - 0.82)	0.61 (0.28 - 1.32)
Latina	0.84 (0.51 - 1.40)	0.38 (0.23 - 0.63)	0.46 (0.23 - 0.93)
Other	0.58	0.78	1.20

	(0.31 - 1.09)	(0.45 - 1.36)	(0.57 - 2.53)
Payment for delivery			
Private insurance	1.00 (ref)	1.00 (ref)	1.00 (ref)
Medicaid	1.37 (0.95 - 1.99)	0.73 (0.44 - 1.21)	1.13 (0.56 - 2.28)

Source: NSFG 2006-2010

OR = Odds ratio; HR = Hazard ratio; CI = Confidence interval

1. Odds ratios obtained from logistic regression models.

2. Hazard ratios obtained from Cox models.