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Descriptive Finding

Female sterilization in the life course: Understanding trends and differentials in early sterilization

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Demographic Research: Volume 47, Article 18
Descriptive Finding

Female sterilization in the life course: Understanding trends and differentials in early sterilization

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Abstract

BACKGROUND
Socioeconomically disadvantaged women and women of color are more likely than other women both to undergo contraceptive sterilization and to desire sterilization reversal. Although younger age at sterilization is associated with greater likelihood of regret, we know little about socioeconomic and racial/ethnic differences in sterilization timing within the life course.

OBJECTIVE
We examine racial, ethnic, and educational differences in the prevalence of sterilization and its timing in the life course.

METHODS
Using data from the 1995, 2002, 2006–2010, 2011–2013, 2013–2015, 2015–2017, and 2017–2019 National Survey of Family Growth, we estimate the prevalence and life timing of sterilization by subgroup and investigate associations with women's demographic and reproductive characteristics.

RESULTS
We find differing patterns of sterilization timing across racial, ethnic, and educational groups. Among sterilized women, Black women are more likely than White women to have undergone their procedures by age 30, but these differences in sterilization timing are attributable to reproductive background characteristics. On the other hand, Hispanic women are more likely than White women to become sterilized, but our findings suggest they are less likely to undergo the procedure by age 30, conditional on becoming sterilized. Women without a college degree are both considerably more likely than college-educated women to become sterilized and, conditional on becoming sterilized, to do so by age 30.

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CONTRIBUTION
Our study sheds new light on racial, ethnic, and educational differences in the life timing of female sterilization over the past quarter century.

1. Introduction

Women's contraceptive behaviors – including decisions about which method to use – have long been associated with race, ethnicity, and social class in the United States. Female sterilization offers a striking case: Black, Hispanic, and less-educated women are more likely than White or college-educated women to undergo sterilization (Chan and Westhoff 2010; Daniels and Abma 2018). These differentials are especially notable given a long history of coercive sterilization in the United States, aimed in particular at low-income women and women of color (Gordon 2002). Although contemporary differential sterilization rates may or may not be problematic depending on the underlying mechanisms at play, the fact that Black, Hispanic, and less-educated sterilized women are also more likely to report regretting the procedure and desiring reversal is concerning (Eeckhaut, Sweeney, and Feng 2018; Shreffler et al. 2015). A remarkable one in four sterilized women report a desire to have their sterilizations reversed – with rates closer to one in three among sterilized Black and Hispanic women and those without a high school degree (Eeckhaut, Sweeney, and Feng 2018; Borrero et al. 2008). Socioeconomically disadvantaged women are also the least likely to have the means to pursue reversal procedures, which are costly, typically not covered by health insurance, and not always medically successful (Messinger et al. 2015).

Underlying reasons for inequality in the prevalence of sterilization regret remain insufficiently understood. Becoming sterilized relatively early in life is one of the most consistent predictors of later regretting the procedure or desiring reversal, perhaps reflecting the increased opportunity for relatively younger women's life circumstances – for example, with respect to finances or partnerships – and/or childbearing preferences to change over their remaining reproductive years. Estimates suggest that women sterilized at age 30 or younger are about twice as likely to report a desire for sterilization reversal as those sterilized at older ages (Curtis, Mohllajee, and Peterson 2006). Despite the importance of age at sterilization for the likelihood of later reporting regret, racial/ethnic and class differentials in the age patterning of sterilization have received little attention.

2. Sterilization in the life course

Given the stratification of childbearing behaviors in the United States today, sociodemographic differences in the age patterning of sterilization may be likely. More advantaged women tend to delay childbearing and complete families later in life, experience lower levels of unintended pregnancy, and have smaller families (Smock and Schwartz 2020; Finer and Zolna 2016; Sweeney and Raley 2014). Prior research suggests that reproductive background factors (e.g., age at first birth, parity) also contribute to racial, ethnic, and educational differentials in contraceptive method choice, including sterilization (Anderson et al. 2012; Borrero et al. 2010; Chan and Westhoff 2010; Hayford, Kissling, and Guzzo 2020). Little is known, however, about potentially important sociodemographic differences in sterilization timing within the reproductive life course. Younger age at sterilization may be particularly attractive to women who have a relatively early first birth, as these women likely reach their desired family sizes earlier in the reproductive lifespan; early sterilization may also appeal to women whose experience of unplanned births leads to increased desire for the long-run certainty of a permanent method.

The current study addresses two sets of questions. First, we ask whether the prevalence and age patterning of sterilization tend to differ across racial, ethnic, or educational groups in the United States over roughly the past quarter century (1995 to 2019). To better understand whether and how the likelihood of early sterilization reflects differences in the overall lifetime levels of sterilization, as opposed to differences in the life timing of the procedure among sterilized women, we consider the overall likelihood of sterilization by specific ages (30 and 44 years) as well as the share of sterilized women who underwent the procedure by age 30. Second, to better understand mechanisms underlying any observed differentials in the likelihood of early sterilization among women who become sterilized at some point in their lives, we investigate whether racial, ethnic, or educational differences in early sterilization are explained by key aspects of women's reproductive histories, including age at first birth, histories of unintended childbearing, and number of prior births.

3. Data and methods

Data for this study are taken from seven rounds of the National Survey of Family Growth (NSFG): 1995, 2002, 2006–2010, 2011–2013, 2013–2015, 2015–2017, and 2017–2019. We focus on two outcomes in the analysis: women's sterilization status and, among the sterilized, age at sterilization. Because previous research found that women sterilized by age 30 were about twice as likely as those sterilized over 30 to express a desire to have

their sterilizations reversed (Curtis, Mohllajee, and Peterson et al. 2006), we classify women who became sterilized at or before age 30 as having experienced early sterilization.

Our two primary independent variables are women's educational attainment and racial/ethnic identity. We distinguish among three levels of education: less than a high school degree, high school degree or some college, and college degree or higher. We classify race/ethnicity into four groups based on respondents' self-identification: Black, White, Hispanic, and other. We also construct measures of several key reproductive background characteristics, including age at first birth, history of unintended childbearing (by age 30), and number of prior births (by age 30). Additional details on these study variables are provided in Table 1.

The analysis proceeds in two stages. First, we use the Kaplan–Meier method to estimate the overall probability of sterilization and the timing of sterilization in the life course. Kaplan–Meier analyses estimate survivor functions, reflecting women's probability of becoming sterilized by a given age. These estimates provide a more accurate rendering of the age patterning of sterilization over the course of women's lives than do descriptive statistics (e.g., mean or median ages) estimated directly from a cross-sectional sample of currently sterilized women, which are right censored by age at interview. (For an in-depth discussion of the Kaplan–Meier estimator, see Allison 2010.) These estimates show recent historical change and variation in probabilities of sterilization at various ages. We focus on probabilities of sterilization by age 44 as an indicator of women's sterilization during the reproductive life course and by age 30 as an indicator of the probability of having undergone sterilization relatively early in life.

The second stage of the analysis takes a closer look at the life timing of sterilization, focusing on the likelihood of early sterilization (by age 30) among women who eventually do undergo the procedure. We investigate differentials by race, ethnicity, and education, both unadjusted and adjusted for key reproductive background characteristics (age at first birth, parity, and history of unintended childbearing). We model early sterilization using logistic regression, limiting the sample to sterilized women only in order to consider the life timing of sterilization separately from its overall likelihood of occurrence at some point in the life course. We pool data over the entire period from 1995 to 2019 to increase sample sizes and limit the sample to older women, age 40 to 44, in order to observe respondents toward the end of their reproductive lives.

Table 1: Weighted distribution of female respondents by selected characteristics. National Survey of Family Growth 1995, 2002, 2006–2010, 2011–2015, and 2015–2019

	All women *Age 15–44*					Sterilized women *Age 15–44*				
	1995	2002	2006–2010	2011–2015	2015–2019	1995	2002	2006–2010	2011–2015	2015–2019
Education										
No high school degree	0.20	0.21	0.21	0.18	0.18	0.20	0.21	0.20	0.19	0.19
High school/some college	0.59	0.56	0.55	0.54	0.54	0.70	0.68	0.68	0.65	0.65
Completed college	0.21	0.23	0.24	0.28	0.29	0.10	0.11	0.11	0.16	0.16
Race/ethnicity										
Hispanic	0.11	0.15	0.17	0.20	0.21	0.13	0.18	0.21	0.24	0.24
White, non-Hispanic	0.71	0.66	0.62	0.58	0.57	0.65	0.61	0.56	0.54	0.56
Black, non-Hispanic	0.14	0.14	0.14	0.15	0.15	0.19	0.18	0.18	0.18	0.15
Other, non-Hispanic	0.05	0.06	0.07	0.08	0.07	0.03	0.03	0.05	0.04	0.05
Age at first birth										
No early birth	0.60	0.61	0.63	0.65	0.67	0.21	0.21	0.20	0.22	0.24
20–24	0.21	0.20	0.19	0.18	0.18	0.38	0.39	0.38	0.31	0.36
<20	0.19	0.18	0.17	0.17	0.15	0.41	0.40	0.42	0.47	0.40
Any unintended childbearing†										
Yes	0.21	0.24	0.25	0.25	0.24	0.47	0.57	0.59	0.63	0.63
No	0.79	0.76	0.75	0.75	0.76	0.53	0.43	0.41	0.37	0.37
Parity†										
0	0.42	0.42	0.44	0.45	0.48	0.03	0.03	0.01	0.01	0.03
1	0.18	0.18	0.16	0.17	0.16	0.08	0.08	0.05	0.05	0.05
2	0.23	0.22	0.21	0.20	0.20	0.42	0.39	0.35	0.35	0.36
3 or more	0.17	0.18	0.18	0.18	0.16	0.47	0.51	0.58	0.60	0.55
N	10,786	7,608	12,263	11,281	10,280	2,197	1,164	1,662	1,452	1,145

Table 1: (Continued)

	All women *Age 40–44*					Sterilized Women *Age 40–44*				
	1995	2002	2006–2010	2011–2015	2015–2019	1995	2002	2006–2010	2011–2015	2015–2019
Education										
No high school degree	0.11	0.11	0.09	0.11	0.13	0.15	0.18	0.16	0.18	0.20
High school/some college	0.62	0.63	0.61	0.49	0.50	0.69	0.68	0.73	0.59	0.62
Completed college	0.27	0.27	0.30	0.40	0.38	0.15	0.14	0.11	0.23	0.19
Race/ethnicity										
Hispanic	0.08	0.11	0.14	0.17	0.20	0.11	0.15	0.20	0.22	0.27
White, non-Hispanic	0.75	0.73	0.64	0.63	0.59	0.69	0.66	0.55	0.58	0.52
Black, non-Hispanic	0.12	0.13	0.14	0.14	0.14	0.16	0.16	0.20	0.19	0.16
Other, non-Hispanic	0.04	0.04	0.07	0.06	0.07	0.03	0.03	0.05	0.02	0.05
Age at first birth										
No early birth	0.50	0.50	0.55	0.58	0.56	0.30	0.25	0.26	0.31	0.31
20–24	0.27	0.28	0.27	0.21	0.24	0.35	0.39	0.40	0.26	0.35
<20	0.23	0.22	0.19	0.22	0.20	0.35	0.35	0.34	0.43	0.34
Any unintended childbearing†										
Yes	0.28	0.30	0.32	0.33	0.36	0.38	0.48	0.48	0.52	0.55
No	0.72	0.70	0.68	0.67	0.64	0.62	0.52	0.52	0.48	0.45
Parity†										
0	0.18	0.15	0.15	0.15	0.16	0.09	0.08	0.08	0.13	0.10
1	0.17	0.18	0.15	0.17	0.18	0.20	0.17	0.14	0.18	0.18
2	0.35	0.32	0.35	0.34	0.33	0.37	0.40	0.42	0.28	0.32
3 or more	0.30	0.35	0.35	0.34	0.33	0.34	0.35	0.36	0.40	0.40
N	1,820	1,190	1,663	1,519	1,351	670	372	533	474	387

Notes: All means are weighted. Analysis sample for women ages 15 to 44 includes those with non-missing values on sterilization, education, and race/ethnicity and, among the sterilized, age at sterilization. Analysis sample for women age 40 to 44 includes those with complete data on race/ethnicity, education, age at interview, age at first birth, sterilization, parity, birth intendedness, and, among the sterilized, age at sterilization. 'No early birth' and 'no' unintended childbearing categories include respondents with no births.
†For the subsample of sterilized women age 40 to 44, used for regression analysis of early sterilization (by age 30), measures of unintended childbearing and parity reflect a woman's status by age 30.
Source: Data for the 1995 and 2002 NSFG are drawn from the Integrated Fertility Survey Series harmonized data file, Release 7 (https://www.icpsr.umich.edu/web/ICPSR/studies/26344).

4. Results

Our survival estimates of recent trends and differentials in the overall probability of undergoing sterilization by age 44 are largely consistent with previous descriptive findings (e.g., Hayford, Kissling, and Guzzo 2020, which looked at 1973–2015); we extend the existing time series to 2015–2019. Overall, survival analysis shows declining sterilization over time: We estimate that about 35% of all women became sterilized by age 44 in 1995, compared with only 28% of women in 2015–2019 (Table 2). Declines in sterilization were observed across all racial and ethnic groups and were especially pronounced among Black women. In 1995, nearly half of Black and Hispanic women and about one-third of White women were estimated to undergo sterilization by age 44, compared to roughly 37% of Hispanic women, 29% of Black women, and 25% of White women in 2015–2019.

Our survival analysis also supports prior descriptive findings of persistent educational differentials in the probability of sterilization from 1995 to 2015 (Hayford, Kissling, and Guzzo 2020) and indicates that these differentials largely extended through 2019 (Table 2). Throughout most of the period considered here, roughly half of women without a high school degree underwent sterilization by age 44, with this percentage dropping only to 46% in the most recent period (2015–2019). Meanwhile, sterilization among college graduates was comparatively rare, with only 17% expected to become sterilized by age 44 in both 1995 and 2015–2019.

We next turn our attention to similarities and differences in sterilization timing in the life course, focusing on sterilization by age 30 (early sterilization). Groups may differ in their likelihoods of early sterilization either because they are more likely to be sterilized at all life stages (i.e., have generally higher levels of sterilization overall) or because the life timing of undergoing the procedure tends to differ across groups of sterilized women. We consider both possibilities here. For ease of interpretation, these results (based on Table 2) are presented graphically in Figures 1 and 2.

We first turn to results for the overall probability of becoming sterilized by age 30. These results are displayed in Table 2. Early sterilization became generally less common over the last 25 years, with about 18% of women sterilized by age 30 in 1995, compared to only 12% of women in 2015–2019. Black women have been generally more likely than women in other groups to undergo early sterilization throughout the period examined here, but Black women have also become considerably less likely over time to undergo early sterilization (from 28% in 1995 to 15% in 2015–2019). Declines in early sterilization were also observed during this period among Hispanic women (from 22% to 14%) and White women (from 16% to 12%).

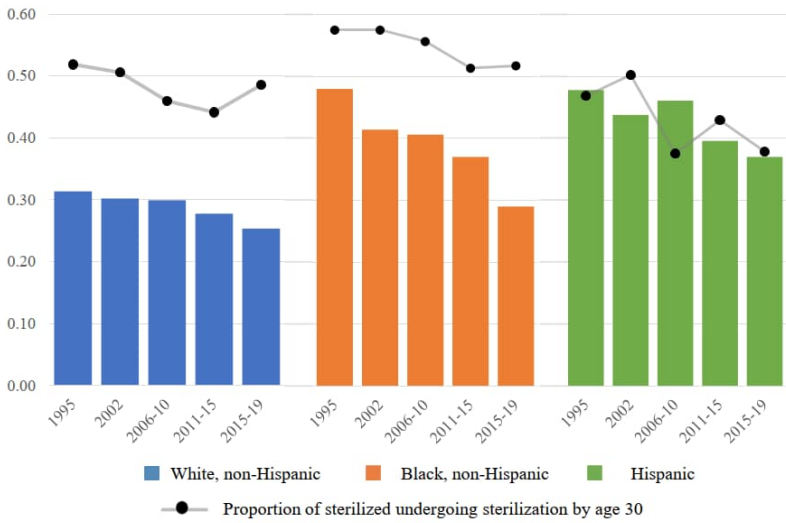
Table 2: Kaplan–Meier estimates of proportion sterilized by selected ages and characteristics: National Survey of Family Growth 1995, 2002, 2006–2010, 2011–2015, and 2015–2019

			All Women	Race / Ethnicity				Education		
				NH White	NH Black	Hispanic	Other	<HS	HS/SC	BA+
Proportion sterilized by age										
1995	(N = 10,786)				p = 0.000				p = 0.000	
		30 years	0.18	0.16	0.28	0.22	0.09	0.36	0.20	0.04
		44 years	0.35	0.31	0.48	0.48	0.25	0.54	0.39	0.17
2002	(N = 7,608)				p = 0.000				p = 0.000	
		30 years	0.17	0.15	0.24	0.22	0.12	0.36	0.20	0.05
		44 years	0.33	0.30	0.41	0.44	0.18	0.55	0.37	0.17
2006–2010	(N = 12,263)				p = 0.000				p = 0.000	
		30 years	0.15	0.14	0.23	0.17	0.10	0.29	0.20	0.03
		44 years	0.33	0.30	0.41	0.46	0.22	0.55	0.40	0.13
2011–2015	(N = 11,281)				p = 0.000				p = 0.000	
		30 years	0.14	0.12	0.19	0.17	0.07	0.29	0.18	0.03
		44 years	0.31	0.28	0.37	0.40	0.18	0.51	0.35	0.18
2015–2019	(N = 10,280)				p = 0.009				p = 0.000	
		30 years	**0.12** (p = 0.000)	**0.12** (p = 0.001)	**0.15** (p = 0.000)	**0.14** (p = 0.000)	0.07 (p = 0.325)	**0.28** (p = 0.023)	**0.17** (p = 0.011)	**0.03** (p = 0.027)
		44 years	**0.28** (p = 0.000)	**0.25** (p = 0.000)	**0.29** (p = 0.000)	**0.37** (p = 0.000)	**0.18** (p = 0.000)	**0.46** (p = 0.017)	**0.32** (p = 0.002)	0.17 (p = 0.138)

Notes: P-values opposite years indicate differences in survival curves across subgroups within a given time period and are based on results of Cox tests. Boldface indicates 2015–2019 proportion differs at p < 0.05 level from 1995 estimates of sterilization at ages 30 and 44, with continuous p-values for these tests displayed in parentheses. All estimates performed on weighted data. Sample restricted to women age 15 to 44 at interview with complete data on age at interview, sterilization, age at sterilization, education, and race/ethnicity.
Source: Data for the 1995 and 2002 NSFG are drawn from the Integrated Fertility Survey Series harmonized data file, Release 7 (https://www.icpsr.umich.edu/web/ICPSR/studies/26344).

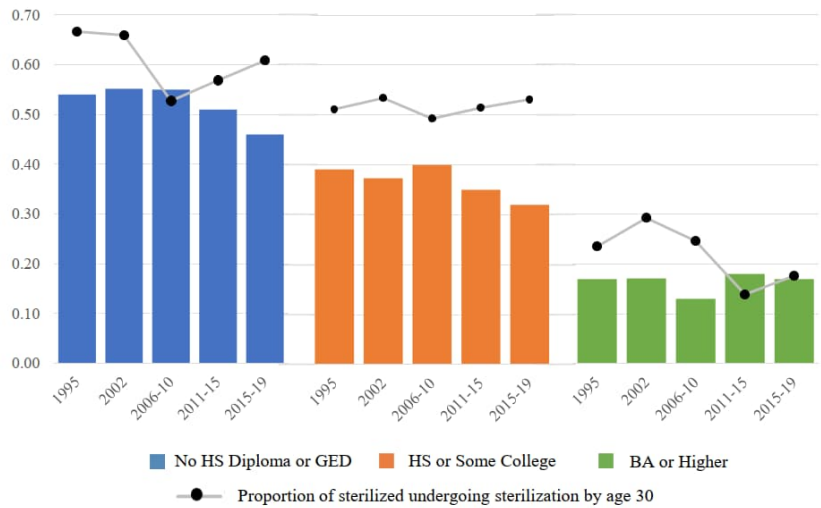
As noted above, the fact that Black and Hispanic women historically have been more likely than other groups to experience sterilization by age 30 might be expected simply based on their relatively higher levels of sterilization throughout the life course. Yet we are also interested in the life timing of sterilization among the subset of women who become sterilized. We get a clearer sense of these patterns from the line graphs displayed in Figure 1. We see a decline in the share undergoing the procedure by age 30 among Black, White, and Hispanic women (see Figure 1), conditional on becoming sterilized, although some racial and ethnic differences in the probability of becoming sterilized by age 30 persist in the most recent data. For example, we find a somewhat higher share undergoing the procedure by age 30, conditional on becoming sterilized during their reproductive years, among Black women than White women (52% vs. 48% in 2015–2019) and a somewhat lower share undergoing the procedure by age 30 among Hispanic women (38% in 2015–2019). The fact that Hispanic women are more likely to become sterilized during their lifetimes than other groups, but among the sterilized, Hispanic women are less likely than women in other racial/ethnic groups to undergo their procedures by age 30, is notable.

Figure 1: Kaplan–Meier estimates of proportion sterilized by age 44 and proportion of sterilized undergoing sterilization by age 30, by race/ethnicity: National Survey of Family Growth 1995, 2002, 2006–2010, 2011–2015, and 2015–2019



We next turn our attention to differences across educational groups, where we observe a still stronger and more persistent association with early sterilization. Early sterilization declined over time among the least-educated women, 28% of whom were sterilized by age 30 in 2015–2019, compared with 36% in 1995 (Table 2). Despite this decline, educational differentials in early sterilization remain marked in recent years, particularly when comparisons involve college-graduate women, of whom only 3% were sterilized by age 30 in the period between 2006-10 and 2015-19 (Table 2). These educational differences in early sterilization are certainly related to overall differences in the likelihood of sterilization across the life course but also to differences in the life timing of the procedure when looking at the subset of women who became sterilized. Throughout the entire period considered here, college-graduate women are both less likely to become sterilized at all compared to their less-educated peers, and, conditional on becoming sterilized, are much less likely to do so by age 30 (see Figure 2). Among sterilized women in 2015–2019, for example, we find that only about 18% of college graduates underwent their procedure by age 30, as compared to nearly 61% of women who did not complete high school.

Figure 2: Kaplan–Meier estimates of proportion sterilized by age 44 and proportion of sterilized undergoing sterilization, by age 30 by educational attainment: National Survey of Family Growth 1995, 2002, 2006–2010, 2011–2015, and 2015–2019



In the final stage of the analysis, we investigate the extent to which racial, ethnic, and educational differences in early sterilization (conditional on becoming sterilized in the first place) are explained by group differences in women's reproductive histories, including age at first birth, number of prior births, and histories of unintended childbearing. First, we look at the unadjusted associations between sterilized women's background characteristics and their likelihood of having undergone the procedure by age 30, with results shown in the first column of Table 3. These replicate many key findings described above. Among women who became sterilized at some point in their lives, we again see that Black women are more likely than White women to have undergone their sterilization procedures by age 30. Less-educated sterilized women are also significantly more likely than their college-graduate peers to have undergone their sterilization procedures by age 30. We further note increased probabilities of early sterilization associated with having had an early first birth, having a prior history of unintended childbearing, and having one or more children by age 30.

Finally, to better understand mechanisms underlying differences in the timing of sterilization among sterilized women, we add controls for women's reproductive background characteristics to the previously described models. These results are shown in the second column of Table 3. Among sterilized women, those with less than a college degree are much more likely than college-educated women to become sterilized by age 30, even after controlling for reproductive background characteristics. Although adjusted results suggest that Hispanic women are less likely than White women to undergo early sterilization, we find no evidence for other racial/ethnic differences in early sterilization after controls. Among reproductive characteristics, parity and early childbearing are strongly associated with early sterilization. These results are consistent with the idea that early sterilization is particularly attractive to women who, having started childbearing relatively early in their reproductive lifespan, wish to also end childbearing early. We do not find significant evidence of a time trend in educational or racial/ethnic differentials in early sterilization (results not shown).

Table 3: Average marginal effects (and 95% confidence intervals) on the probability of early sterilization by age 30 (conditional on sterilization by age 40 to 44), from binary logistic regression analyses assessing associations between women's characteristics and likelihood of early sterilization: National Survey of Family Growth, 1995–2019

	Among the sterilized, early sterilization by age 30 N = 2,436			
	Unadjusted associations		Adjusted associations	
Education				
No high school degree	**0.40**	(0.32 – 0.49)	**0.15**	(0.05 – 0.26)
High school degree/some college	**0.36**	(0.29 – 0.43)	**0.18**	(0.09 – 0.26)
Completed college (ref)	0.00		0.00	
Wald χ^2 (df = 2)		p = 0.000		p = 0.000
Race/ethnicity				
Hispanic	0.01	(–0.06 – 0.08)	**–0.07**	(–0.14 – –0.01)
Black, non-Hispanic	**0.09**	(0.03 – 0.15)	–0.02	(–0.08 – 0.04)
Other, non-Hispanic	–0.01	(–0.18 – 0.16)	–0.08	(-0.20 – 0.05)
White, non-Hispanic (ref)	0.00		0.00	
Wald χ^2 (df=3)		p = 0.048		p = 0.112
Age at first birth				
<20	**0.51**	(0.45 – 0.57)	**0.21**	(0.11 – 0.30)
20–24	**0.43**	(0.36 – 0.50)	**0.17**	(0.08 – 0.26)
25 or later/no births (ref)	0.00		0.00	
Wald χ^2 (df = 2)		p = 0.000		p = 0.000
Any unintended childbearing (by age 30)				
Yes	**0.28**	(0.22 – 0.34)	0.04	(–0.02 – 0.11)
No (ref)	0.00		0.00	
Parity (by age 30)				
0 births (ref)	0.00		0.00	
1 birth	**0.10**	(0.03 – 0.16)	0.02	(–0.09 – 0.13)
2 births	**0.51**	(0.45 – 0.58)	**0.35**	(0.23 – 0.47)
3 or more births	**0.62**	(0.56 – 0.68)	**0.40**	(0.27 – 0.53)
Wald χ^2 (df = 3)		p = 0.000		p = 0.000
Wave				
1995 (ref)	0.00		0.00	
2002	0.04	(–0.04 – 0.12)	0.01	(–0.06 – 0.08)
2006–10	–0.03	(–0.11 – 0.04)	**-0.07**	(–0.13 – –0.01)
2011–15	–0.05	(–0.13 – 0.02)	-0.05	(–0.11 – 0.02)
2015–19	0.04	(–0.05 – 0.13)	0.04	(–0.04 – 0.11)
Wald χ^2 (df = 4)		p = 0.216		p = 0.053

Notes: Boldface indicates coefficient differs significantly from zero at $p < 0.05$ level. For each variable, we offer results from Wald tests of the null hypothesis that coefficients for all categories are jointly equal to 0.00. 'Unadjusted associations' present zero-order associations with no other variables in the model; 'adjusted associations' present estimates from a model that includes all covariates shown. Sample is limited to sterilized women age 40 to 44 at interview with no missing cases on key variables. 'No unintended childbearing' category includes respondents with no live births. Respondent's parity and whether she had experienced an unintended birth are measured at age 30.
Source: Data are drawn from the 1995, 2002, 2006–2010, 2011–2013, 2013–2015, 2015–2017, and 2017–2019 rounds of the National Surveys of Family Growth. Analyses are weighted.

5. Conclusion

In sum, our findings shed new light on racial, ethnic, and educational differences in patterns of early sterilization. Among sterilized women, Black women are somewhat more likely than White women to have undergone their procedures by age 30. This difference, however, appears to be largely explained by racial differences in reproductive background characteristics. Among sterilized Hispanic women, we find suggestive evidence of a relatively lower likelihood of undergoing the procedure before age 30. This juxtaposition of Hispanic women's relatively higher likelihood of undergoing sterilization at all, but relatively lower likelihood of undergoing sterilization by age 30 conditional on becoming sterilized at some point in their lives, should be further explored in future work.

We also identify profound educational differences in the likelihood of early sterilization throughout the historical period considered here. Not only are college-graduate women less likely than their less-educated peers to become sterilized at some point during their reproductive years, but we also identify large educational differences in the life timing of these procedures. Conditional on becoming sterilized, women with college degrees are substantially less likely than less-educated women to undergo their procedures by age 30. The educational gap in early sterilization is particularly pronounced between college graduates and those without a high school degree. Since reproductive characteristics – including the likelihood of having had an early first birth – do not fully account for the differentials we observe, the results raise questions about how educational attainment affects contraceptive and reproductive behaviors.

Our study is the first to rigorously consider racial, ethnic, and educational differences in the life timing of sterilization in recent decades. Rates of early sterilization represent women's decisions to end their fertility by age 30 – a remarkable attenuation of the reproductive lifespan that is associated with high levels of subsequent desire for reversal. Future research should examine potential structural factors (e.g., access and affordability), interactional factors (e.g., communication between clinicians and patients), and individual factors (e.g., contraceptive knowledge and preferences) mediating the association of early sterilization with race, ethnicity, and educational background.

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