Published in final edited form as:
Fertil Steril. 2009 May ; 91(5): 1642–1645. doi:10.1016/j.fertnstert.2008.01.103.

Does vasectomy explain the difference in tubal sterilization rates between black and white women?

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Abstract

Study objective—To examine whether the observed difference in tubal sterilization rates between black and white women is dependent on racial/ethnic differences in vasectomy rates.

Design—Secondary analysis of national, cross-sectional survey

Setting—2002 National Survey of Family Growth

Patients—Women ages 15-44 years old with a current partner who were able to provide information about their partner's vasectomy status.

Interventions—None

Main outcome measure—The primary outcome was tubal sterilization. Among women with a current partner that had not undergone vasectomy, a multivariable logistic regression model was used to estimate the effects of race/ethnicity on tubal sterilization after adjusting for potential confounders.

Results—Of the 3391 women in the sample, 14% of white women had a current partner that had undergone vasectomy compared to 5% of Hispanic women and 4% of black women ($p<0.001$). Among the 3064 women whose partners had not undergone vasectomy, black women were more likely to undergo tubal sterilization (OR: 1.6; 95% CI: 1.1, 2.2) based on adjusted multivariable analysis.

Conclusion—After controlling for partner vasectomy status, black women were still more likely to undergo tubal sterilization than white women.

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Capsule: Our findings indicate that the lower rates of vasectomy among black men does not explain the observed racial/ethnic differences in tubal sterilization rates.

Keywords

National Survey of Family Growth (NSFG); race/ethnicity; tubal sterilization; vasectomy

Introduction

The use of tubal sterilization as a method of contraception varies by race/ethnicity in the United States (1-7). While tubal sterilization is a very effective method of contraception, it permanently terminates a woman's reproductive ability and is associated with a high degree of regret (8,9). Black women are significantly more likely than white women to undergo tubal sterilization even after controlling for important demographic and socioeconomic factors such as age, insurance status, income, parity, marital status, and education (7). Conversely, black and Hispanic men are much less likely to undergo male sterilization (vasectomy) compared to white men (1-6). Because most married or co-habiting couples in the U.S are racially similar (10), investigators have postulated that the high rates of tubal sterilization among black women is, in part, due to the lack of partner vasectomy as a contraceptive option (3,4,6). This study sought to examine whether racial/ethnic differences in vasectomy rates explains the racial variation seen in tubal sterilization rates.

Materials and Methods

Study design

We used data collected by Cycle 6 (2002) of the National Surveys of Family Growth (NSFG), a national cross-sectional survey (11). The NSFG is a periodic study conducted by the National Center for Health Statistics, an agency of the Department of Health and Human Services, to provide national estimates of factors affecting pregnancy and birth outcomes, including sexual activity, contraceptive use, marital status, infertility, and use of medical services for family planning. For the 2002 NSFG, interviews were conducted between March 2002 and March 2003. This analysis of the NSFG was approved by the University of Pittsburgh Institutional Review Board.

Study population

The NSFG is based on a national multi-stage probability sample designed to represent women and men 15-44 years of age in the household population of all 50 States and the District of Columbia. The 2002 NSFG sample included 7,643 women and 4,928 men. Teenage, black and Hispanic participants were oversampled. Interviews were conducted in person by a trained female interviewer in the selected participant's home. The overall response rate was approximately 80%. This analysis included only those women with a current partner (either cohabiting or married) who were able to provide information about whether or not their partner had undergone vasectomy.

Study outcome and covariates

The outcome variable in this analysis was whether or not the respondent had undergone tubal sterilization at any time prior to interview. The primary predictor of interest was self-reported race. Race categories included Hispanic, non-Hispanic white, non-Hispanic black, and non-Hispanic other (Asian, Pacific Islander, Alaskan native, and American Indian). Age, education level, insurance status, income, parity, and marital status have been associated with tubal sterilization in prior literature (1-7) and were, therefore, examined as potential confounders in this study.

Statistical analysis

We describe baseline sociodemographic characteristics of women by race/ethnicity using chi-square tests for all categorical variables. We then examined the bivariate association between our outcome variable and each covariate. Among women who reported that their current partners did not have a vasectomy, a multivariable logistic regression model was used to estimate the independent effect of race/ethnicity on tubal sterilization. Women with designated race of "other" were excluded from the analysis because this group was of too limited a sample size (n=184) and too heterogenous to produce meaningful conclusions. Because women aged 15-19 were so unlikely to have undergone sterilization, these women were also excluded from the analysis.

Statistics for this project were produced using STATA software, version 9.0, using appropriate adjustment for the NSFG's complex sample design. All estimates were weighted to adjust for the different sampling and response rates within the survey sample.

Results

Within the NSFG survey sample, 3554 women provided information on the vasectomy status of their current partner. The baseline characteristics of these women are depicted in Table 1. Overall, 11% of the women's current partners had undergone vasectomy. Fourteen percent of white women had a current partner that had undergone vasectomy compared to 5% of Hispanic women and 4% of black women ($p<0.001$). Hispanic women had less education compared to non-Hispanic black and white women. Black and Hispanic women were more likely to have either public or no insurance, lower income, and to be cohabiting rather than married to their current partner. Among the 15% of women who were cohabiting, the vast majority (71%) had never been married. Among those women whose current partners had undergone vasectomy, approximately 5% had undergone tubal sterilization compared to 25% of women whose current partners had not undergone vasectomy ($p<0.001$).

Table 2 shows results from unadjusted and adjusted analyses including only the 3136 women with a current partner who had not undergone vasectomy. In unadjusted analysis, Hispanic and black women were significantly more likely to undergo sterilization compared to white women (OR: 1.4; 95% confidence interval (CI): 1.0. 1.8 and OR: 1.8; 95% CI: 1.3, 2.5, respectively). In adjusted multivariable analysis, black women were still significantly more likely to have undergone tubal sterilization compared to white women (OR: 1.6; 95% CI: 1.1, 2.2).

Discussion

Because there are significant racial/ethnic variations in vasectomy rates (1-6), vasectomy may be an important confounder of racial/ethnic differences in tubal sterilization rates. Investigators have postulated that because few black or Hispanic men adopt vasectomy, the high rates of tubal sterilization among their partners may be a response to the lack of that contraceptive option (3,4,6). To investigate this theory, we examined tubal sterilization rates after controlling for partner vasectomy status. Among the 3136 women whose partners had not undergone vasectomy, black women were still more likely to have undergone sterilization compared to white women. Our findings indicate that the lower rates of vasectomy among black men does not explain the observed racial/ethnic differences in tubal sterilization rates. It remains unclear, therefore, what factors lead to higher rates of sterilization among black women. Possible explanations include patient preferences, provider bias in contraceptive counseling, and system-level factors that restrict the range of contraceptive alternatives for minority and/or economically disadvantaged women.

Assuming that most of the couples in our sample were of the same race/ethnicity, our results also confirm racial differences in vasectomy rates. Our study, however, cannot explain why black and Hispanic men rarely undergo vasectomy. One possible reason may be that minority men have less access to or lower use of medical care than non-minority men (12). Other reasons may stem from culturally-based differences in union stability (fewer black couples were married than white couples) or in attitudes towards male sterilization since the relationship between ability to conceive and masculinity is thought to be more pronounced in black and Hispanic cultures (13). Another explanation involves regional differences in practice. Previous research has noted that vasectomy rates are highest and tubal sterilization rates are lowest in the western U.S. (6). The authors of that study speculated that in areas where there is extensive HMO coverage (i.e., western U.S.), physicians may recommend vasectomy over tubal sterilization because it is a much less costly procedure. Because relatively fewer black people live in the west U.S. (10), it is possible that regional differences account for the racial differences in female and male sterilization rates. Alternatively, it is also possible that the observed racial variations account for the regional differences. Neither argument, however, explains the low rate of sterilization observed in Hispanic men who are more concentrated in western U.S. (10).

Our study has several important limitations. First, because we were primarily interested in tubal sterilization, we used information collected from women instead of men. Therefore, we made the fundamental assumption that partners were of similar race/ethnicity in order to assess the mediating effect of vasectomy on the relationship between race/ethnicity and tubal sterilization. The US Census confirms that over 90% of married partners are racially concordant (10). Second, although the NSFG provides a wealth of information about reproductive health in the United States, it is a cross-sectional survey that obtains information at only one time point. Therefore, information on factors which may be important in the decision to undergo tubal sterilization are obtained at the time of interview (including partner vasectomy status), rather than at the time the decision was made. The 5% of women who had undergone tubal sterilization who also had a current partner that had undergone vasectomy suggests that partner switching had occurred since the time of tubal sterilization because it is clinically unreasonable to sterilize both partners. However, the majority of women (80%) in our analysis have been married only one time.

In summary, our study showed that there was indeed an inverse relationship between partner vasectomy and tubal sterilization, but that the lower rates of vasectomy among black men could not explain the higher rates of tubal sterilization observed among black women. Further studies are needed to explore why black women are significantly more likely than white women to undergo tubal sterilization, a permanent procedure associated with a high degree of regret (8, 9).

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Table 1

Baseline demographic and socioeconomic characteristics of the sample by race/ethnicity [a] (n=3554)

Variable	White, non-Hispanic (%) (n=2213)	Hispanic (%) (n=870)	Black, non-Hispanic (%) (n=471)
Total sample	74.2	16.5	9.3
Current partner with vasectomy	13.8	4.9	3.7
Insurance status			
Private	80.8	45.1	65.0
Public/none[b]	19.2	54.9	35.0
Age			
15-19	1.8	3.5	0.9
20-29	26.1	36.3	30.4
>30	72.1	60.2	68.7
Poverty level[c]			
<100%	8.4	33.8	22.0
100% - 499%	77.3	61.7	68.4
>499%	14.3	4.5	9.6
Education			
HS diploma or less	37.8	69.6	48.9
At least some college	62.2	30.4	51.1
Parity			
0 children	24.2	12.7	14.3
1 or 2 children	52.0	54.5	52.8
3 or more children	23.8	32.8	32.8
Current marital status			
Married	91.4	83.7	80.2
Co-habiting with a partner	8.6	16.3	19.8

p-values for all comparison (using Chi-square tests) were <0.01

[a] weighted to reflect the U.S. female civilian noninstitutional population

[b] public insurance included Medicaid, Medicare, Medi-Gap, Indian health service, CHIP, state-sponsored, or other government program

[c] poverty threshold based on 2001 level defined by the US Census Bureau which takes intoaccount total household income and number (i.e. $18,104 for a family of 4)

Table 2

Unadjusted and adjusted odds ratios of undergoing tubal sterilization for women whose current partners have not undergone vasectomy[a] (n=3136)

Variable	Unadjusted analysis OR and 95% CI	Adjusted analysis OR and 95% CI[b]
Race/ethnicity		
White	ref	ref
Hispanic	1.4 (1.0, 1.8)	0.9 (0.7, 1.3)
Black	1.8 (1.3, 2.5)	1.6 (1.1, 2.2)
Insurance status		
Private	ref	ref
Public/none[c]	1.5 (1.2, 1.9)	1.5 (1.1, 1.9)
Age at surgery		
20-29	ref	ref
>30	5.4 (3.9, 7.3)	4.5 (3.1, 6.4)
Poverty level[d]		
<100%	ref	ref
100%- 499%	0.7 (0.5, 1.0)	1.0 (0.7, 1.5)
>499%	0.2 (0.1, 0.3)	0.7 (0.4, 1.2)
Education		
HS diploma or less	ref	ref
At least some college	0.4 (0.3, 0.5)	0.5 (0.3, 0.7)
Parity		
0 children	ref	ref
1 or 2 children	10.2 (5.5, 18.9)	6.3 (3.3, 12.0)
3 or more children	34.4 (18.3, 64.5)	16.0 (7.8, 32.3)
Marital status		
Ever been married	ref	ref
Never been married	0.3 (0.2, 0.4)	0.5 (0.3, 0.8)

[a] weighted to reflect the U.S. female civilian noninstitutional population

[b] adjusted for all other covariates in table

[c] public insurance included Medicaid, Medicare, Medi-Gap, Indian health service, CHIP, state-sponsored, or other government program

[d] poverty threshold based on 2001 level defined by the U.S. Census Bureau which takes into account total household income and number (i.e. $18,104 for a family of 4)