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Shreffler, Karina M.; Greil, Arthur L.; McQuillan, Julia; and Gallus, Kami L., "Reasons for tubal sterilisation, regret and depressive symptoms" (2016). *Sociology Department, Faculty Publications*. 585.

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Author manuscript

J Reprod Infant Psychol. Author manuscript; available in PMC 2017 May 13.

Published in final edited form as:

J Reprod Infant Psychol. 2016 ; 34(3): 304–313. doi:10.1080/02646838.2016.1169397.

Reasons for tubal sterilisation, regret and depressive symptoms

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Abstract

Objective—To examine the associations between sterilisation reasons, regret, and depressive symptoms.

Study Design—Black, Hispanic, and non-Hispanic White US women ages 25–45 who participated in the National Survey of Fertility Barriers (NSFB) and reported a tubal sterilisation surgery were included in the sample for this study (n=837). Logistic regression was used to examine how characteristics of the sterilisation surgery (reasons for sterilisation, time since sterilisation, and new relationship since sterilisation) are associated with the odds of sterilisation regret, and linear regression was used to examine associations between sterilisation regret, sociodemographic factors, and depressive symptoms.

Results—Findings revealed that 28 percent of U.S. women who have undergone tubal sterilisation report regret. Time since sterilisation and having a reason for sterilisation other than simply not wanting (more) children (e.g., situational factors, health problems, encouragement by others, and other reasons) are associated with significantly higher odds of sterilisation regret. Finally, sterilisation regret is significantly associated with depressive symptoms after controlling for sociodemographic characteristics.

Conclusion—Sterilisation regret is relatively common among women who have undergone tubal sterilisation, and regret is linked to elevated, but not necessarily clinical depressive symptoms. The reasons for sterilisation can have important implications for women's sterilisation regret and associated depressive symptoms.

Keywords

Tubal ligation; Sterilisation; Regret; Depression; CES-D; NSFB

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The authors have no conflicts of interest.

Introduction

Female sterilisation is the second most common form of contraception in the United States, with an estimated 10.2 million American women who have undergone sterilisation surgery (Jones et al., 2012). The most simple reason women seek a permanent contraceptive solution is because they no longer want children; but some women provide reasons that are more complex that reflect social, economic, and health barriers to having (more) children (Shreffler, McQuillan, Greil, & Johnson, 2015). Tubal sterilisation is a highly effective and common method of contraception, yet the psychological implications of the procedure are not well understood. Some women regret having the procedure (Hillis et al., 1999), which can be distressing for them (Kelekci et al., 2005). Yet most research on sterilisation regret and adverse psychological consequences has been conducted with small samples and has not included reasons for the sterilisation (for a review see Shreffler, McQuillan, Greil, & Johnson, 2015).

Reasons for sterilisation surgery

Surgical sterilisation refers to any medical operation performed on a woman that permanently prevents conception. Therefore, it is generally assumed that a woman undergoing a sterilisation procedure does not desire to have children in the future. Yet many sterilisation surgeries are not due to simply no longer wanting children; they could reflect social, economic, and health reasons alone. Shreffler et al. (2015) determined that the majority of sterilisation procedures are due to a variety of factors including situational factors (e.g., age, finances), health reasons, and encouragement by family or physician; however, they included hysterectomies and other surgeries in their analysis. We suspect that tubal ligation surgeries are more often performed due to simply no longer wanting children, but have been unable to find any studies that incorporate broader considerations for why women undergo tubal ligation surgeries (see Borrero et al., 2011 for an analysis of various reasons why women choose tubal sterilization over other contraceptive options). We believe that even if the majority of tubal sterilisations are simply for no longer wanting children, it remains important to consider the reason for the surgery because women who report reasons for sterilisation surgery besides simply no longer wanting children are more likely to report regret over their surgery (Shreffler et al., 2015).

Sterilisation regret and depressive symptoms

Sterilisation regret is usually assessed by asking people if they desire (more) children, by asking if they would like to have the procedure reversed, or by studying women who present themselves for sterilisation reversal or in-vitro fertilization (IVF). A non-representative prospective study found 20.3 percent of those who were 30 or younger and 5.9% of those over 30 at the time of sterilisation, respectively, expressed regret within 14 years of their tubal sterilisation (Hillis et al., 1999). Black and Hispanic women are more likely to have undergone tubal sterilisation and to report wanting to reverse the procedure than White women (Borrero et al., 2008). Women who have tubal ligations at younger ages are significantly more likely to experience sterilisation regret than are older women (Boring, Rochat, & Becerra, 1988; Curtis, Mohllajee, & Peterson, 2006; Karaminia, Saunders, & Chamberlain, 2002; Marcil-Gratton, 1988; Miller, Shain, & Pasta, 1991, 1993). Having few

children at the time of sterilisation (Kariminia et al., 2002), and a change in marital status with a simultaneous desire to have children with a new partner (Karaminia et al., 2002; Moseman et al., 2006) are also associated with higher odds of sterilisation regret.

Few studies examine directly the psychological impact that sterilisation regret can have. One exception is a small prospective study conducted in Istanbul, wherein Kelekci et al. (2005) found a significant association between dissatisfaction with sterilisation and an increase in self-reported depression. Yet research outside of the sterilisation field identifies reproductive problems as one of the most serious life stressors a woman can experience (Amir, Horesh, & Lin-Stein, 1999). Relinquishing fertility intentions is associated with significant increases in distress for women (White & McQuillan, 2006), which suggests that the psychological consequences of sterilisation regret may reflect significantly higher distress compared to women who do not regret sterilization. As in the case for women who are involuntarily childless due to infertility (McQuillan et al., 2012; McQuillan, Greil, & Torres-Stone, 2007), if regretted, sterilisation may prevent the successful achievement of a woman's identity as a mother and the accomplishment of desired life goals.

This study extends research on the psychological implications of female reproductive health procedures by examining the associations between sterilisation regret and depressive symptoms among a nationally-representative sample of women who have undergone a tubal ligation surgery in the US. Prior research examining regret following tubal sterilisation has not explicitly modeled reasons other than simply not wanting (more) children for the procedure. We therefore examine women's reasons for undergoing tubal sterilisation in addition to other salient factors identified in prior research. We expect that women will be more likely to report regret following sterilisation when the procedure was not simply because they did not want (more) children. We further expect that women who express regret will report greater depressive symptoms than women who do not.

Data and Methods

Data and study sample

We use the National Survey of Fertility Barriers (NSFB), a random digit dialing telephone survey of 4,787 women of childbearing ages (25 to 45) and a subset of their spouses/partners. The study was designed to assess social and health factors related to reproductive choices and fertility for U.S. women. Collected in 2004–2006, the data are nationally representative, with an oversample of Black and Hispanic women and women with fertility problems. Oversamples were drawn in two ways. The NSFB oversampled census tracts where racial/ethnic minority populations exceeded 40%, and through screening questions, it undersampled women who had never experienced a biomedical fertility barrier and had completed their childbearing. Analyses for this study are adjusted using a sample design weight variable to adjust the sample to national estimates by age, educational attainment, marital status, metropolitan residence, region of the country, race/ethnicity, and parity based on the 2005 Current Population Survey (CPS) estimates for women aged 25–45 in households. The response rate to the screener questions was 53.7%, which is typical for RDD telephone surveys conducted in recent years (McCarty et al., 2006). Our sample is restricted to 837 White, Black, and Hispanic women who responded “yes” to the question,

“Have you ever had a surgery that makes it difficult or impossible to have a baby?” and reported “tubal ligation” or “tubes tied” to a follow-up question asking, “What type of surgery was this?”

Measures

Sterilisation characteristics—A dichotomous measure of *sterilisation regret* is based on the question, “Did this [sterilisation] surgery keep you from having children that you wanted to have?” (1 = *yes*; 0 = *no*). Women were also asked about their *reasons for being sterilised*. The survey included the question, “Women have these surgeries for a variety of reasons. Why did you have this surgery?” The list included reasons such as “I had all that I wanted,” “My spouse/partner had all he wanted,” “Financial reasons,” and “Problems with my female organs.” In addition, the interviewer could select “Other,” and type in the appropriate response(s). Following the suggested categories that Shreffler et al. (2015) developed on the reasons for sterilization surgery, we created five categories of sterilization reasons: *did not want (more) children* (e.g., “had all I wanted”, “all done”), *situational* (e.g., “financial reasons,” “age,” “relationship issues”), *health problems* (e.g., “problem with female organs,” “probably would not have a healthy pregnancy/child,” “probably would not have a healthy child,” “health problems unrelated to reproductive problems,” “difficult prior pregnancies/deliveries”), and *encouraged by others* (e.g., “partner had all he wanted,” “Dr. recommended sterilisation,” “pressure from family members other than spouse/partner”). Another category, *other reason*, included three women who reported “Don’t know” and “Refused” as well as women who could not be classified into another category due to missing data. Respondents were also asked for the date of sterilisation, and *years since surgery* was calculated based on the date given and the age of the respondent at the time of the interview. *New relationship since surgery* is a dichotomous variable indicating if the respondent is in a marriage or cohabiting relationship that started after the date of the surgery.

Sociodemographic control variables—Several life course variables were included as control variables. *Age* is measured in years and ranges from 25 to 45. *Number of children* is a continuous variable that ranged from 0 to 3 in the sample, where 3 includes three or more children. Responses to three questions were combined into a scale to measure *economic hardship*: (1) “During the last 12 months, how often did it happen that you had trouble paying bills?,” (2) “During the last 12 months, how often did it happen that you did not have enough money to buy food, clothes, or other things your household needed?,” and (3) “During the last 12 months, how often did it happen that you did not have enough money to pay for medical care?” This is a unidimensional scale with high reliability ($\alpha = .82$). *Race/ethnicity* was assessed using two standard questions based on Census wording: “What race or races do you consider yourself to be?” and “Do you consider yourself to be either Hispanic or Latino or neither one?” Individuals who reported Hispanic/Latino ethnicity were classified according to coding rules that gave first priority to identification as “Hispanic” and second priority to identification as “Black.” Based on this coding, dummy variables were constructed for *Black* and *Hispanic*, compared to *White*, the reference category. Those indicating “other” were eliminated from the analysis due to small cell counts.

Depressive symptoms was measured using a 10-item modified version of the Center for Epidemiologic Studies – Depression Scale (CES-D; Radloff, 1977; Andresen, Carter, Malmgren, & Patrick, 1994). The scale included questions such as: “In the past two weeks... I was bothered by things that don’t usually bother me;” “I felt depressed;” and “My sleep was restless.” The 10-item CES-D scale was measured on a 4-point Likert-scale with responses ranging from 0 (never or rarely) to 3 (all of the time), and it has been found to perform as well as the longer (20-item) CES-D instrument (Carpenter et al., 1998). Items were coded or reverse-coded so that high scores indicate high levels of depression. Cronbach’s alpha for the CES-D scale in the NSFB is .78. The CES-D-10 is best suited for assessing general levels of depressive symptoms; there are guidelines, however, for guidelines to determine a score that indicates a diagnosis of depression in the general population. For example, after summing the points for all 10 items, cut offs of 8, 9, and 10 have been used to indicate a diagnosis of depression in the general population, with cutoffs of 10 or more found to have adequate sensitivity and specificity (Andresen et al., 1994; Carpenter et al., 1998). In our sample, approximately 25% of the women surveyed had scores of 10 or higher. In our analyses, however, the scale was logged to reduce skew from outliers.

Analytic strategy

We examined descriptive statistics (means/percentages, standard deviations, and range) of all study variables by whether or not the women in the study reported regret (see Table 1). ANOVAs were conducted to determine if there were significant differences by group. Next, we conducted a logistic regression analysis to test for the associations between sterilisation characteristics and sterilisation regret. Finally, we conducted an ordinary least squares (OLS) regression analysis to examine associations among sterilisation regret, sterilization characteristics, and depressive symptoms.

Results

Descriptive results indicate that most women in the sample (72%) did not report regret for their tubal sterilisation. There were several significant differences in levels of study variables depending upon sterilisation regret. Though on average women in both groups reported levels of depression that are below the cut-off (score of 10) for diagnosis, women who reported regret had significantly higher depression scores ($M=8.78$ vs. $M=7.43$, $p<.001$). Women reported a variety of reasons for their surgeries, and some of them differed by group. The most common reasons were not wanting (more) children (63% vs. 35%) and health problems (16% vs. 23%), followed by situational circumstances (8% vs. 13%), encouragement by others (5% vs. 16%), and “other” reasons (1% vs. 6%) for women with no regret and women with regret, respectively. On average, women who reported regret had higher rates of being in a new relationship since the surgery, the surgery was further in the past, and they had greater economic hardship. Fewer White women and more Hispanic women reported sterilisation regret.

Consistent with our expectations, Table 2 shows that reasons other than not wanting (more) children for sterilisation surgery (situational, health problems, encouragement or pressure

from family or health care provider, and other reasons) are associated with higher odds of sterilisation regret than the not wanting (more) children reason. More time since the sterilization surgery is associated with higher odds of regret. Contrary to prior research, we did not find being in a new union since the sterilisation surgery to be associated with regret. Older women reported lower odds of regret, and Hispanic women reported regret twice as often as non-Hispanic White women.

The analysis of depressive symptoms presented in Table 3 reveals that sterilisation regret is associated with higher depressive symptoms, and the association is not explained by the inclusion of other sterilization characteristics or sociodemographic variables. Women who began a new marriage or cohabiting relationship following the time of their sterilization surgery reported higher depressive symptoms. Higher economic hardship is also associated with higher depressive symptoms. Compared to White women, Black women reported lower depressive symptoms.

Discussion and Conclusion

Patterns of associations from this nationally-representative sample provide unique insights regarding sterilisation regret and depressive symptoms. The findings suggest that despite the assumption that most women have tubal sterilization simply because they do not want (more) children, nearly half of the women in our sample who had undergone a tubal sterilization (46%) reported having the surgery for reasons other than simply not desiring more children. Further, these reasons have important implications for women's feelings of regret, which in turn has an association with depressive symptoms. Those who regret their sterilisation (e.g., reported their sterilisation surgery prevents them from having children they want to have) report significantly higher levels of depressive symptoms, even after controlling for factors that could explain the regret (e.g., sterilization characteristics and sociodemographic characteristics).

The association between sterilisation regret and depressive symptoms suggests that some women may not reconcile the loss of fertility prior to undergoing the procedure. These current findings concur with previous literature that suggests that reproductive problems represent significant life stressors for women (Amir et al., 1999) and that, more specifically, for women, relinquishing fertility intentions is associated with significant increases in psychological distress (White & McQuillan, 2006).

The pattern of results from this nationally representative sample of women who have undergone tubal sterilisation surgery suggests the need for more thorough pre-sterilisation counseling, similar to that proposed by Rosenfeld, Taskin, Kafkashli, Rosenfeld, and Chuong (1998). Women of childbearing ages considering surgical sterilisation as a contraceptive method should be fully informed of the available contraceptive methods, risks, and the relative permanence of the sterilisation procedures. Rosenfeld et al. (1998) suggested that this counseling should also elicit information about the couples' psychosocial and relationship dynamics. Recognizing the high divorce and remarriage rates in the U.S., and the link between adverse reproductive experiences and odds of divorce (Shreffler, Hill, & Cacciatore, 2012), more information is needed on the possible impact that distress

associated with sterilisation regret might have for relationship consequences. The association we find between sterilisation regret and depression suggests that more attention should be given to both long-term childbearing plans for non-sterilised women and potential mental health consequences of sterilisation for reasons other than simply not wanting (more) children among those who are already sterilised.

In order to further explain the current findings, further research should explore details about women's sterilisation decision-making processes and social contexts. Qualitative studies of sterilisation experiences provide the kind of information that can help to uncover the dynamics that underlie the patterns observed here. Additionally, the current study is limited by dependence on cross-sectional data. Unfortunately, this prevents us from assessing women's depressive symptoms before their sterilisation surgeries; Kelekci et al. (2005) found that women who were depressed before sterilisation surgery were more likely to remain depressed after and to be more dissatisfied with their sterility. Therefore we cannot rule out the possibility that reverse causal ordering is occurring (i.e. that women with higher depressive symptoms perceive less volition in their actions or are more susceptible to others encouraging sterilisation). The current data also do not provide a way to determine how some women come to have tubal sterilisation surgeries that they do not perceive as solely due to not wanting (more) children. Another important next step is to ascertain if there is an underlying factor that contributes to both less volition around contraceptive surgery and depressive symptoms, or if the higher depressive symptoms are primarily a result of being sterilized for non-contraceptive reasons other than simply not wanting (more) children. Finally, more investigation into sterilisation regret and its association with depression is needed in future research. For the ease of data analysis, women in this study were categorised into dichotomous responses regarding their regret, but it is likely that the experience of regret falls more along a continuum than is reflected here. Indeed, some of the women in the present study were coded as having no regret, when they reported that they were unsure if their surgeries prevented them from having children they wanted to have. It is possible, therefore, that women with the highest levels of regret are particularly at risk for depression, but the data set prevent this level of sensitivity in the analyses.

Despite the need for additional research, this study highlights the importance of the context surrounding women's sterilisation procedures, particularly the reasons for the surgery, as well as the possible negative psychological consequences of sterilisation regret. The current findings offer caution to applying a strictly medical approach to surgical sterilisation and illustrate the need for health care providers to communicate about reasons for the surgery, alternatives to permanent sterilisation, and the possibility of regret. The issue of relatively permanent fertility loss should be discussed openly and clearly to women considering surgical sterilisation as a permanent contraceptive method.

Acknowledgments

This research was supported in part by grant R01-HD044144 "Infertility: Pathways and Psychosocial Outcomes" funded by NICHD (Lynn White and David R. Johnson, Co-PIs).

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Table 1

Descriptive statistics of study variables by sterilisation regret, weighted (N=837).

Variables	Sterilised, no regret (N=605)		Sterilised, with regret (N=231)		Range	p
	M or %	SD	M or %	SD		
Depressive symptoms (not logged)	7.43	4.61	8.78	5.27	0–30	***
Sterilisation characteristics						
Reasons for surgery						
Did not want (more) children	63%	.48	35%	.48	0–1	***
Situational	8%	.28	13%	.33	0–1	
Health problems	16%	.36	23%	.42	0–1	*
Encouraged by others	5%	.22	16%	.37	0–1	***
Other reason	1%	.10	6%	.23	0–1	***
Years since surgery	7.90	5.58	9.60	6.14	0–27	***
New relationship since surgery	17%	.37	25%	.44	0–1	**
Sociodemographic characteristics						
Age	37.33	5.38	36.6	5.57	25–45	
Number of children	2.67	1.04	2.75	1.19	0–7	
Economic hardship	5.12	1.88	5.49	2.00	3–12	*
Race/ethnicity						
White	65%	.48	54%	.50	0–1	**
Black	19%	.40	18%	.39	0–1	
Hispanic	15%	.36	28%	.45	0–1	***

p<.001;

**
p>.01;

*
p<.05. M indicates “Mean” and SD indicates “Standard Deviation.”

Note: Data Source: United States National Survey of Fertility Barriers.

Table 2

Logistic regression assessing sterilisation regret associated with sterilisation characteristics and sociodemographic characteristics among sterilised women (N=837).

<i>Variables</i>	Model 1		Model 2	
	<i>OR</i>	<i>SE</i>	<i>OR</i>	<i>SE</i>
Sterilisation characteristics				
Reasons for surgery (Did not want (more) children)				
Situational	2.50 ^{***}	.25	2.41 ^{**}	.26
Health problems	2.60 ^{***}	.22	2.55 ^{***}	.23
Encouraged by others	5.27 ^{***}	.27	6.07 ^{***}	.29
Other reason	6.45 ^{***}	.36	6.06 ^{***}	.38
Years since surgery	1.04 [*]	.02	1.10 ^{***}	.02
New relationship since surgery	1.02	.16	.82	.17
Sociodemographic characteristics				
Age			.92 ^{***}	.02
Number of children			.91	.12
Economic hardship			1.07	.04
Race/ethnicity (White)				
Black			1.40	.23
Hispanic			2.01 ^{**}	.21
Constant	.16 ^{***}	.18	1.46	.85

Note: Reference categories in parentheses. *OR* indicates "Odds Ratio" and *SE* indicates "Standard Error."

^{***}
p<.001;

^{**}
p>.01;

^{*}
p<.05.

Note: Data Source: United States National Survey of Fertility Barriers.

Table 3

Linear regression assessing depressive symptoms (CES-D) associated with sterilisation regret, sterilisation characteristics, and sociodemographic characteristics among sterilised women (N=837).

Variables	Model 1		Model 2		Model 3	
	b	SE	b	SE	b	SE
Sterilisation characteristics						
Sterilisation regret	.07***	.02	.06***	.02	.05***	.02
Reasons for surgery (Did not want (more) children)						
Situational			.00	.03	.01	.03
Health problems			.02	.02	.01	.02
Encouraged by others			.00	.03	-.01	.03
Other reason			.07	.04	.06	.04
Years since surgery			.00	.00	.00	.00
New relationship since surgery			.09***	.02	.07***	.02
Sociodemographic characteristics						
Age					.00	.00
Number of children					.01	.01
Economic hardship					.04***	.00
Race/ethnicity (White)						
Black					-.05*	.02
Hispanic					-.03	.02
Constant	2.83***	.01	2.76***	.02	2.56***	.08

Note: Reference categories in parentheses. *b* refers to the unstandardized coefficient, and *SE* refers to "Standard Error."

- *** p<.001;
- ** p>.01;
- * p<.05.

Note: Data Source: United States National Survey of Fertility Barriers.