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Correlates of long-acting reversible contraception versus sterilization use in advanced maternal age

Shelby N. Apodaca, MD [a, *], Melissa D. Mendez, MD [a], Sheralyn S. Sanchez, MPH [a], Zuber D. Mulla, PhD [a, b]

[a] Obstetrics and Gynecology, Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center El Paso, El Paso
[b] Julia Jones Matthews Department of Public Health, Texas Tech University Health Sciences Center, Lubbock

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ABSTRACT

Purpose: To identify correlates associated with choosing long-acting reversible contraception (LARC) over female sterilization (FS) from a subsample of women aged 35 to 44 years in a nationally representative survey.
Methods: We analyzed data from women aged 35 to 44 years from the 2011–2013 National Survey of Family Growth Female Respondent File (n = 1532). Data were analyzed using SAS 9.3 software. All analyses accounted for the complex survey sample design. Multinomial logistic regression was used to identify factors associated with choosing LARC versus FS. A domain analysis was performed focusing on women aged 35 to 44 years.
Results: Approximately 90% of the surveyed women had not received counseling or information about birth control in the past 12 months. Factors associated with using an LARC method versus FS were higher level of education, birth outside of the United States, and higher number of lifetime male sexual partners. Factors associated with using FS versus an LARC method were non-Hispanic black race and women who had not had a checkup related to using a birth control method in the last 12 months.
Conclusions: The results of our study suggest that a large proportion of women of advanced maternal age in the United States have not received contraceptive counseling in the past 12 months. Providers should focus on providing comprehensive contraceptive and sterilization counseling to women aged 35 to 44 years, especially those using unreliable, reversible contraception.

Introduction

Female sterilization (FS) is one of the most common methods of contraception worldwide, used by one in three women of reproductive age [1]. Previous studies have shown that women aged 35 to 44 years choose FS as a method of contraception more commonly than younger women [2]. In fact, the 2006–2010 National Survey of Family Growth (NSFG) reported that 10.2 million women were sterilized in the United States, with 37% of women aged 35 to 39 years and 51% of women aged 40 to 44 years reporting FS as their primary contraceptive method. The 2006–2010 and 2011–2013 NSFG both found permanent FS to be more common among disadvantaged women with lower levels of education and income, among women with public or no insurance, women with higher parity, and among black and Hispanic women [3,4].

Interestingly, however, between 1995 and 2006, total sterilization procedures among unsterilized women in the United States aged 15 to 44 years fell by 12%, despite a 4% population growth within this demographic [5]. It has been speculated that this decline in FS in the United States may be a result of more women having access to reversible contraception alternatives due to improvements in family planning education resource availability and possibly increased insurance coverage of long-acting reversible contraceptive (LARC) methods, such as intrauterine devices and etonogestrel subdermal implants [5]. Prior data from NSFG results have showed an increase in overall LARC method use by women in the United States from 1.3% in 2002 to 7.2% in 2011–2013 [3,4]. Women with incomplete childbearing, medical comorbidities, or those unwilling to accept the surgical risks of permanent sterilization should be encouraged to use an LARC method. Women should be informed that LARC methods carry a lower risk of morbidity, mortality, and regret as compared with FS, and the

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* Corresponding author. Texas Tech University Health Sciences Center El Paso, 4801 Alberta Avenue, El Paso, TX 79905. Tel.: 915-215-5000; fax: 915-545-6946.
E-mail address: shelby.apodaca@ttuhsc.edu (S.N. Apodaca).

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efficacy of each LARC method is nearly 100% [6–8]. In addition, outcomes of The Contraceptive CHOICE Project in 2014 indicate that the majority of reproductive-aged women will choose an LARC method when barriers of cost, knowledge, and access are removed [9]. In the literature, characteristics of women who choose LARC methods have not been directly compared with women who choose FS. And furthermore, there are a limited number of studies in the published literature that examine the factors that influence the contraceptive choices of women in their later reproductive years.

Among women aged 35 to 44 years in the 2011–2013 NSFG, only 5.3% were using an LARC method, compared with 11.1% of women aged 25 to 34 years [3]. These findings may be related to multiple factors, including increased use of FS, lack of recent contraceptive counseling, financial constraints, or limited access to care [3,10]. Women aged 40 to 44 years are less likely to have received any type of contraceptive counseling in the past 2 years, despite a continued risk of unintended pregnancy and increased pregnancy risks associated with advanced maternal age [11]. It is important to understand the characteristics of women of advanced maternal age and their contraceptive choices to provide this population with adequate care, counseling, and appropriate contraception to prevent unplanned and potentially high-risk pregnancies. The objective of our study is to identify correlates associated with choosing long-acting reversible contraception over FS from a subsample of women aged 35 to 44 years in a nationally representative survey.

Methods

The NSFG was established by the Centers for Disease Control and Prevention's National Center for Health Statistics to collect and analyze data on factors affecting men's and women's reproductive health. Sample respondents for the 2011–2013 NSFG were selected based on screening interviews in selected households and information was collected using in-person interviews. The Female Respondent File contained data from interviews with 5601 women aged 15 to 44 years, and the response rate was 73.4% [12]. Approval from the Texas Tech University Health Sciences Center at El Paso Institutional Review Board for the Protection of Human Subjects deemed the study exempt from formal Institutional Review Board review.

For our study, we used the 2011–2013 NSFG Female Respondent File described previously; however, we only analyzed data from the 1532 female participants who were 35 to 44 years of age with at least one lifetime male sexual partner. This cohort represents the civilian household population of 19,981,021 women aged 35 to 44 years in the United States (this figure is arrived at by summing the sample weights). Women without at least one lifetime male sexual partner were excluded, as these women are highly unlikely to be using any type of contraception, especially FS. Contraceptive use in our cohort was categorized into the following three groups which are defined below in the Data analysis section: FS, LARC methods, and other methods.

Twelve characteristics of the women in our cohort were examined in our analysis, listed in Tables 1 and 2. The characteristics we included were chosen from the available survey questions in the NSFG questionnaire, based on clinical practice pattern observations and agreed on by two physicians. The characteristics chosen were intended to reflect a range of demographics, socioeconomic statuses, differences in access to care and presence of high-risk behaviors (i.e., multiple sexual partners, recent treatment of a sexually transmitted disease, etc.). Categories within each of the 12 characteristics, listed in Tables 1 and 2, were derived directly from the NSFG questionnaire and redistributed into less than or equal to five categories to reduce the potential for sparse data bias. The redistributed categories were agreed on by two physicians and a maternal health epidemiologist. Referent values were chosen based on the United States public health norms (i.e., non-Hispanic white race, high school graduate, born in the United States, etc.) or based on expected standard of care (i.e., annual physical exam with contraceptive counseling), and agreed on by two physicians and a maternal health epidemiologist.

Data analysis

The 2011–2013 NSFG Female Respondent File was analyzed using procedures in SAS 9.3 (SAS Institute, Inc., Cary, NC) that are indicated when analyzing data from a complex survey sample design. Weighted prevalence estimates were calculated using the SURVEYFREQ procedure and the appropriate cluster, strata, and weight variables. Subjects ranged in age from 15 to 44 years. Our subjects of interest, however, were women aged 35 through 44 years. Deleting women from the sample who were outside of this age range would disrupt the weighted nature of the dataset, hence a dichotomous domain variable was created (age $\geq$35 years with $\geq$1 lifetime male sexual partner vs. not in the aforementioned category) and incorporated into our analyses.

A three-level categorical outcome variable was created using the CONSTAT1 variable. CONSTAT1 is described as the, "Current contraceptive status (first priority code) (RECODE)," in the online codebook [13]. The three levels were FS (which served as the referent outcome group), LARC (defined as Norplant or Implanon implant or intrauterine device), and none of the aforementioned. The detailed definition of FS, obtained by examining the STRLOPER recode variable, is as follows: tubal ligation or sterilization, hysterectomy, or other operation or type unknown. A multinomial logistic regression model was fit using the SURVEYLOGISTIC procedure by specifying the glogit link function. The appropriate cluster, strata, and weight variables were also specified. The DOMAIN statement (rather than the BY statement) was used to properly calculate odds ratios (ORs) for the two domains described previously. We were interested in estimating ORs for women aged 35 to 44 years for the outcome of LARC versus FS, and therefore the results for the younger age stratum and for contraceptive methods other than LARC or FS were not reported. The predictor variables that were included in the logistic regression model were chosen based on their clinical or epidemiologic importance. ORs were reported along with 95% Wald confidence intervals (CIs) and *P* values.

Results

Characteristics of the sample

In our cohort, 489 women (31.3%) were using FS, 83 women (5.4%) were using an LARC method, and 960 women (63.4%) were not classified in any of the aforementioned two categories. This final group of women was labeled as other (Table 1). Women in the other category included 152 who were using male sterilization, 122 who were using an oral contraceptive, 115 who were using the male condom, and 27 who were pregnant at the time of the survey interview. More than half of the women in our cohort (59.5%) were currently married to a person of the opposite sex with an additional 10% of women who were not married, but living with an opposite sex partner. The ethnic distribution was 61.5% non-Hispanic white, 18.4% Hispanic, 13.6% non-Hispanic black, and 6.4% non-Hispanic other. Almost one-fifth of the women were born outside of the United States (17.7%). Nearly 90% of women had at least a high school diploma or equivalent, with 16.3% having a masters, doctorate, or professional degree. Approximately 18% of the women in our cohort were born outside of the United States. Fewer than

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