Published in final edited form as:

Contraception. 2013 December ; 88(6): . doi:10.1016/j.contraception.2013.07.010.

Adherence to hysterosalpingogram appointments following hysteroscopic sterilization among low income women

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Abstract

Background—The few studies on post-Essure hysterosalpingogram (HSG) adherence rates show inconsistent results. This study examined associations between sociodemographic variables not examined in prior studies and HSG adherence among low income women.

Study Design—Medical records of 286 women who underwent sterilization between August 31, 2005 and September 30, 2011 were reviewed. Chi-square and Mann-Whitney tests were used to determine variable associations with HSG adherence.

Results—The adherence rate for the first HSG was 85.0% (243/286). Variables associated with adherence were: lower education level ($p=.01$), not working outside the home ($p=.04$), being married ($p<.0001$), lower gravidity ($p=.03$), fewer lifetime number of sexual partners ($p<.0001$), no sexually transmitted infection history ($p<.01$), Hispanic ethnicity ($p<.0001$), Spanish as a primary language ($p<.0001$) and living further from the clinic ($p<.01$).

Conclusions—This study demonstrates that achieving high rates of adherence with the recommended HSG following Essure placement is feasible among low income populations. Furthermore, not speaking English or having to commute a far distance to the clinic do not appear to be barriers. This is encouraging considering the importance of this test to confirm tubal occlusion.

Keywords

adherence rates; hysterosalpingogram; hysteroscopic sterilization

1. Introduction

Few US studies report on adherence rates with the post-Essure (Conceptus, Inc., Mountain View, California) hysterosalpingogram (HSG) [1]. Results are varied with limitations of small sample sizes or few correlates. The highest adherence rates (91%–100%) were observed during clinical trials [2,3,4], a study that employed a follow-up intervention [5], and a study where a concomitant procedure was performed at the follow-up visit [6].

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Adherence rates of 87%–94% were observed among insured patients [7,8]. Only 2 studies had low income populations; with adherence rates of 13% (n=69) [9] and 53% (n=132) [10].

Further research with larger sample sizes and additional sociodemographic variables are needed to determine the associations with, and feasibility of, obtaining an HSG procedure among women without private insurance. We examined associations between the 1st HSG and sociodemographic and reproductive history variables not included in prior studies among 286 low-income women. We hypothesized that economic security variables, such as higher education, being married, and working outside the home, would be associated with higher adherence rates. We also hypothesized that variables of opportunity, such as living closer to the clinic and being on injectable contraception would be associated with higher adherence rates. Additionally, we documented adherence rates for 2nd and 3rd HSG appointments.

2. Materials and Methods

Institutional Review Board approval was obtained at The University of Texas Medical Branch. Hospital coding personnel provided identification on patients that obtained Essure procedures in our out-patient clinics between August 31, 2005, and September 30, 2011. Electronic medical record (EMR) data were collected on 413 patients. Excluded cases in this analysis were unsuccessful Essure placement (n=25) and performing the procedure in a remote site (n=102) because these HSGs were referred to another hospital. This study reflects 286 patients from our publicly funded clinic. All records were de-identified in the analysis database and information extracted included demographics, reproductive and sexual histories, sterilization procedure details, and HSG results. Missing data ranged from 0.0%–13.6% (Table 1).

Personnel provided English and Spanish verbal and written educational materials on the importance of the HSG, during the preoperative consultation and on the procedure day. Clinic staff made HSG appointments with the radiology department for patients directly after Essure procedures and the radiology department called patients with reminders a few days before the scheduled HSG. For the majority of patients who missed their initial HSG appointments, clinic staff phoned patients to re-schedule. If patients were not reached via telephone after several attempts, a certified letter was sent in the mail to the patients' home addresses. During the study period, this clinic had federal and state grant funding that fully paid for the sterilization and HSG procedures, which reduced the likelihood that HSGs were performed in other locations.

Adherence rates for the first, and when indicated, 2nd and 3rd, HSG exams were determined from the EMR. We examined the association between having the initial HSG performed and several opportunity/ resource variables: household distance in miles from the clinic, education, and marital and employment status. We also examined age at time of the sterilization, body mass index (BMI), and reproductive health history variables: gravidity, parity, lifetime number of sexual partners, history of sexually transmitted infection (STI), and whether the patient used injectable contraception immediately post-procedure, to assess whether clinic visits for the next injection were associated with HSG adherence. Last, we examined race/ ethnicity and primary language (English/ Spanish).

Statistical analyses were performed using SPSS 15.0 for Windows (IBM Corp., Somers, NY). Missing data were excluded from the analysis; they were between 0.0–4.2%, with the exception of education (8.7%), lifetime number of sexual partners (10.8%) and employment status (13.6%). Bivariate comparisons were conducted on the two groups (HSG performed or not performed) using chi square or Mann-Whitney tests as appropriate. Due to the small number of cases in the non-adherence group (n=43), cell sizes were too small to conduct

multivariate analyses. We estimate that a minimum of 100 for a single factor with two levels would have been necessary for multivariate analyses.

3. Results

There was a mean of 3.5 ± 1.6 (min 2.3, max 23.3) months between the Essure and 1st HSG procedures. Only 9 (3.1%) women received their HSGs earlier than 11 weeks (3 at 9 weeks, 6 at 10 weeks). 19 women (6.6%) received their HSGs at 11 weeks, with the largest percentage, 39.2%, at the mandated 12 weeks. An additional 13.6% received HSGs at 13 weeks and 7% at 14 weeks. By 17 weeks all categories were 1%. Observed occlusion rates were similar whether the HSG was performed early, on-time, or late.

The adherence rate for the 1st HSG was 85.0% (243/286). If additional HSGs were necessary, the adherence rate for the 2nd appointment (around 6 months post-procedure) was 39/53 (73.6%) and 7/14 (50.0%) for a 3rd HSG (around 9 months post-procedure). The declining adherence rates may have been due to smaller sample sizes or a possible decrease in motivation as more time progressed.

Adherence to the 1st HSG appointment was associated with farther household distance from the clinic ($p=.008$), lower education level ($p=.010$), not working outside the home ($p=.039$), being married ($p<.0001$), lower gravidity ($p=.027$), fewer lifetime number of sexual partners ($p<.0001$), no STI history ($p=.002$), Hispanic race/ ethnicity ($p<.0001$), and Spanish as a primary language ($p<.0001$, Table 1).

4. Discussion

We observed a much higher adherence rate for the 1st HSG than prior papers on low income populations [9,10]. In fact, our 85% rate approached those observed in insured patients [7,8]. We cannot determine from this study the reason for this finding, but speculate that it may have been due to the level of counseling and staff reminders provided in this clinic. Another possibility is that differences in demographic characteristics of our population, such as ethnicity, could have led to differences in findings between our study and prior reports on low income populations.

We included many sociodemographic variables not studied in previous work, and our findings confirmed the complex nature of these variables as predictors. For example, our bivariate analysis revealed associations between HSG adherence and living farther from the clinic and lower levels of education. Whereas this information seems counter intuitive, these variables were correlated (analysis not shown in paper) with other significant variables, such as race/ ethnicity, and may be related to other factors not included in this study.

Our adherence rates may be underestimates. Some patients may have moved to other health service areas and could have obtained HSGs at other clinics, especially those who needed 2nd and 3rd HSGs. However, given the funding opportunities in our clinic, and fairly large sample size, we assume that there was little noticeable patient attrition. Although this is currently one of the largest studies on HSG follow-up rates, the analysis was also limited by sample size. We detected associations between sociodemographic variables not seen in other studies on post- Essure HSG adherence rates, which suggest further research into sociodemographic variables, with larger sample sizes. Larger sample sizes may also lend analysis into factors related to adherence to subsequent (2nd or 3rd) HSGs.

Acknowledgments

Federal support for this study was provided by the Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD) as follows: Dr. Berenson, under a mid-career investigator award in patient-oriented research (K24HD043659). Dr. Leyser-Whalen, as a former NRSA postdoctoral fellow under an institutional training grant (T32HD055163; Berenson, PI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NICHD or the National Institutes of Health.

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Implications

This study demonstrates that achieving high rates of adherence with the recommended HSG following Essure placement is feasible among low income populations. Furthermore, not speaking English or having to commute a far distance to the clinic do not appear to be barriers. These results are encouraging considering the importance of the HSG to confirm tubal occlusion because of the potential health risks posed by tubal patency.

Table 1

Study sample characteristics by first HSG follow-up status

	First HSG performed (n=243)	First HSG not performed (n=43)	p-value
Distance (miles) from clinic, median (IQR)	61.0 (46.0–106.0)	51.0 (14.0–104.0)	.008
Education(grade) [°] , median (IQR) [°]	10.0 (9.0–12.0)	12.0 (10.0–12.0)	.010
Working outside home n (%) [±]			
Yes	68 (80.0%)	17 (20.0%)	.039
No	145 (89.5%)	17 (10.5%)	
Marital status n (%)			.000
Yes	153 (92.2%)	13 (7.8%)	
No	90 (75.0%)	30 (25.0%)	
Age (years), median (IQR)	33.0 (30.0–37.0)	31.0 (27.0–37.0)	.082
BMI, median (IQR)	29.4 (25.9–34.3)	31.9 (25.9–35.9)	.262
Gravidity, median (IQR) ~	3.0 (2.0–4.0)	4.0 (3.0–5.0)	.027
Parity, median (IQR) ~	3.0 (2.0–4.0)	3.0 (2.0–4.0)	.443
Lifetime number of sex partners, median (IQR)	1.5 (1.0–3.0)	3.0 (2.0–7.0)	.000
STI history n (%) [≈]			.002
Yes	56 (74.7%)	19 (25.3%)	
No	178 (89.4%)	21 (10.6%)	
Using Depo® n (%)			.358
Yes	97 (82.9%)	20 (17.1%)	
No	139 (86.9%)	21 (13.1%)	
Race/ethnicity n (%) [≈]			.000
White	49 (75.4%)	16 (24.6%)	
Black	18 (66.7%)	9 (33.3%)	
Hispanic	169 (90.9%)	17 (9.1%)	
Primary language n (%)			.000
English	107 (77.5%)	31 (22.5%)	
Spanish	133 (92.4%)	11 (7.6%)	

IQR= interquartile range

Missing data (n=2, 0.7%)

[°] Education calculated by last grade completed.[°] Missing data (n=25, 8.7%)[~] Missing data (n=1, 0.4%)

Omitted 2 outliers of 40 or more partners, had 29 other missing (n=31, 10.8%)

[≈] Omitted 8 women in the Asian category

Omitted 2 in “other” category and had 2 missing data (n=4, 1.4%)

≈ Missing data (n=12, 4.2%)

Missing data (n=9, 3.1%)

+ Missing data (n=39, 13.6%)