CrossMark

Who receives a medical evaluation for infertility in the United States?

Leslie V. Farland, Sc.M.,[a] Ai-ris Y. Collier, M.D.,[b] Katharine F. Correia, M.P.H.,[c] Francine Grodstein, Sc.D.,[a,d] Jorge E. Chavarro, M.D., Sc.D.,[a,d,e] Janet Rich-Edwards, Sc.D.,[a,d,f] and Stacey A. Missmer, Sc.D.[a,d,g]

[a] Department of Epidemiology, Harvard T.H. Chan School of Public Health; [b] Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center; [c] Department of Biostatistics, Harvard T.H. Chan School of Public Health; [d] Channing Division of Network Medicine, Brigham and Women's Hospital and Harvard Medical School; [e] Department of Nutrition, Harvard T.H. Chan School of Public Health; [f] Connors Center for Women's Health and Gender Biology, Brigham and Women's Hospital and Harvard Medical School; and [g] Department of Obstetrics, Gynecology, and Reproductive Biology, Brigham and Women's Hospital and Harvard Medical School, Boston, Massachusetts

Objective: To investigate characteristics of receiving a medical evaluation for infertility among infertile women.
Design: Prospective cohort.
Setting: Academic institution.
Patient(s): A total of 7,422 women who reported incident infertility between 1989 and 2009 in the Nurses' Health Study II.
Intervention(s): None.
Main Outcome Measure(s): Report of receiving a medical evaluation for infertility.
Result(s): Approximately 65% of women who reported infertility had a medical evaluation for infertility. Infertile women who were parous (relative risk [RR] = 0.81, 95% confidence interval [CI] 0.78–0.84), older, current smokers (RR = 0.89, 95% CI 0.83–0.96), or who had a higher body mass index (BMI) were less likely to report receiving a medical infertility evaluation. Infertile women who exercised frequently, took multivitamins (RR = 1.03, 95% CI 1.00–1.07), lived in states with comprehensive insurance coverage (RR = 1.09, 95% CI 1.00–1.19), had a high household income, or who had a recent physical examination (RR = 1.15, 95% CI 1.06–1.24) were more likely to report receiving a medical infertility evaluation.
Conclusion(s): These findings highlight demographic, lifestyle, and access barriers to receiving medical infertility care. Historically, the discussion of barriers to infertility care has centered on financial access, geographic access, and socioeconomic status. Our findings build off literature by supporting previously reported associations and showcasing the importance of demographic and lifestyle factors in accessing care. (Fertil Steril® 2016;105:1274–80. ©2016 by American Society for Reproductive Medicine.)
Key Words: Infertility, fertility evaluation, fertility treatment, barriers to access, barriers to care

Use your smartphone to scan this QR code and connect to the discussion forum for this article now.*

* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Discuss: You can discuss this article with its authors and with other ASRM members at http://fertstertforum.com/farlandl-medical-evaluation-infertility-us/

I n the United States from 2006-2010, approximately 1.5 million couples report being affected by infertility each year (1, 2). Understanding the burden of this disease has become a national priority (3), with the U.S. Department of Health and Human Services and Centers for Disease Control and Prevention releasing a National Public Health Action Plan for the Detection, Prevention, and Management of Infertility (4). The National Survey for Family Growth (NSFG), estimated that among women with fertility problems, in 1982, 1995, and 2006–2010, only 41%–46% of women have ever used any type of infertility service (including both medical help to get pregnant and to prevent miscarriage) and this proportion has not varied across time (5).

Data from national surveys and clinic-based studies investigating barriers in access to infertility care have been limited in their scope, focusing on differences by race, age, cause of infertility, and socioeconomic factors (1, 5–15). The most consistently investigated predictors for accessing fertility care are financial access (insurance coverage, income, and high educational attainment) and white race. In addition to these factors, healthy behaviors, lifestyle factors, and access to the medical system may contribute to whether or not an infertile couple has a medical evaluation for their condition. However, these factors have not been thoroughly investigated. The

current research may have methodological limitations due to small sample sizes, poor response rates, and using cross-sectional study designs that could lead to reverse causation or recall bias.

Using data from the Nurses' Health Study II, a large prospective cohort of female medical professionals, we evaluated a broad range of characteristics associated with utilization of fertility evaluation. We hypothesized that previously investigated characteristics including age, race/ethnicity, income, and insurance coverage would alter fertility care utilization. We also hypothesized that previously uninvestigated lifestyle characteristics such as body mass index (BMI), cigarette smoking, vitamin use, exercise, and routine physical examination history would influence whether or not women have a medical evaluation for infertility.

MATERIALS AND METHODS

The Nurses' Health Study II is a prospective cohort study that began in 1989 when 116,430 registered nurses, 25–42 years old, returned a mailed questionnaire regarding their health and lifestyle. At recruitment, women lived in 1 of 14 states. However, the participants have since moved to all 50 states. Follow-up questionnaires are sent biennially, with a cumulative follow-up rate from the original cohort of ≥ 90%. Informed consent was obtained from all participants and the study was approved by the Institutional Review Board of Brigham and Women's Hospital. For the current analysis, premenopausal women with no history of hysterectomy, oophorectomy, or tubal ligation were followed from 1989, when the cohort began, through 2009.

Collection of Information on Fertility Evaluation

To define infertility status, women were asked to self-report if they had "tried to become pregnant for more than 1 year without success" on every questionnaire cycle from 1989-2001, and in 2005 and 2009. We restricted our study population to women who reported incident infertility after the first questionnaire cycle (n = 7,422). To define our outcome, women were then asked what was the cause for their infertility and were given the following choices: "not investigated, not found, tubal blockage, ovulatory disorder, endometriosis, cervical mucus factors, spousal infertility, and/or other." Women could report multiple causes for infertility. Women who reported "not investigated" were considered not to have sought infertility evaluation (n = 2,598). Women who did not report "not investigated" but instead reported a cause for infertility or that the cause was "not found" were classified as having reported medical evaluation and diagnosis of infertility (n = 4,824).

Reliability and Validity of Self-Reported Infertility

Although validation data were not available on all types of infertility, a validation study of self-reported ovulatory disorder infertility was conducted among a random subset of 100 women in the Nurses' Health Study II who cited ovulatory infertility as a physician identified infertility cause on the questionnaire. More than 93% of the women who responded to the supplemental questionnaire reported diagnostic test results and/or indicative treatment for ovulatory infertility indicating that a conventional infertility workup was performed. In addition, among a subsample of the original 100 women, 40 random women whose participant medical records were reviewed, 95% of these women had indication in their medical records (diagnostic test and/or treatment) confirming medically diagnosed ovulatory disorder infertility and a conventional infertility workup [16]. We also see high validity of our measure of self-reported fertility treatment in this cohort across time (≥ 84% concordance) and with medical records (74% of medical records confirmed women's reported treatment, whereas the remaining records generally contained no information on specific treatments) [17]. These validation estimates verify the nurses' ability to accurately report their experience with conventional physician-based infertility evaluation.

Covariates

Because we wished to prospectively quantify the association between the self-reported woman's characteristics and her likelihood of seeking fertility evaluation to reduce reverse causation and recall bias, the covariate values were defined approximately 2 years before the first report of infertility, with the exception of marriage, which was collected at time of reported infertility. Demographic factors including age (categorized according to the Society of Assisted Reproductive Technology [SART] age guidelines), race, marriage, and male partner's education in 1999 were analyzed. We considered reproductive characteristics including nulliparity, history of uterine fibroids, history of endometriosis, and history of spontaneous abortion. We also considered several self-reported lifestyle factors, including current BMI (in kilograms per meter squared) based on weight and height measurements as discussed in detail previously [18], BMI at age 18 years, cigarette smoking status, alcohol intake, current multivitamin use, and physical activity (measured in metabolic equivalent of task hours/week based on weekly reported recreational physical activity) [19]. Finally, we considered factors related to access, including at least one routine physical examination, physical examination for general health symptoms, and annual household income. State-mandated insurance coverage of fertility treatment was defined as "comprehensive coverage" (state-mandated infertility treatment coverage including assisted reproductive technology [ART]), "limited coverage" (state-mandated infertility coverage that included diagnosis and treatment but may exclude IVF treatment or did not specify treatment coverage), and "offer only" (state-mandated offer of an insurance policy that includes fertility treatments available for purchase) based on history of state legislature on fertility treatment, which was updated at each questionnaire cycle [11, 17, 20]. All models were mutually adjusted for other demographic, lifestyle, and access covariates.

Data Analysis

Log-binomial models were used to estimate relative risks and confidence intervals of seeking an infertility evaluation [21].