Journal of Adolescent Health 53 (2013) 401–406

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

Use of the Intrauterine Device Among Adolescent and Young Adult Women in the United States From 2002 to 2010

Amy K. Whitaker, M.D., M.S. [a,*], Katherine M. Sisco, M.D., M.S. [b], Ashley N. Tomlinson [a,c], Annie M. Dude, M.D. [d], and Summer L. Martins, M.P.H. [a]

[a] Department of Obstetrics and Gynecology, Section of Family Planning and Contraceptive Research, The University of Chicago, Chicago, Illinois
[b] Department of Obstetrics and Gynecology, Northwestern University, Chicago, Illinois
[c] School of Social Service Administration, The University of Chicago, Chicago, Illinois
[d] Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, North Carolina

Article history: Received December 22, 2012; Accepted April 19, 2013
Keywords: Adolescent; Contraception; IUD (intrauterine device); Contraceptive use; NSFG (National Survey of Family Growth)

A B S T R A C T

Purpose: Long-acting contraceptives, such as the intrauterine device (IUD), show potential for decreasing the incidence of unintended pregnancy. However, use among adolescent and young adult women remains low. We determined factors associated with IUD use among young women.
Methods: We conducted an analysis of nationally representative, cross-sectional data from the 2002 and 2006–2010 National Surveys of Family Growth. We included sexually active women 15–24 years old. We used bivariate analysis to compare proportions of ever-use of any type of IUD in 2002 and in 2006–2010 and multivariable logistic regression to identify correlates of ever-use in 2006–2010.
Results: We found an increase in IUD use in teens 15–19 years old, from .2% to 2.5% ($p < .001$), and among women 20–24 years old, 2.0% to 5.4% ($p < .001$). Use increased among nearly all subgroups of respondents. Compared with nulliparous young women, those with one prior delivery and with two or more deliveries were substantially more likely to have used an IUD (adjusted OR 11.43, 95% CI 3.61–36.16, and adjusted OR 13.60, 95% CI 4–46.48, respectively). Young black women were less likely to report IUD use (adjusted OR .32, 95% CI .16–.66), and women whose mothers received at least a high school education were more likely to report use (adjusted OR 2.56, 95% CI 1.22–5.43).
Conclusions: IUD use is increasing among adolescent and young adult women overall and among almost all sociodemographic subgroups. Nonetheless, use remains low, and nulliparous young women are highly unlikely to use the IUD.

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IMPLICATIONS AND CONTRIBUTION

IUDs provide safe and effective contraception for adolescents, a population at high risk of unintended pregnancy. This study examines recent national trends in IUD use and identifies subgroups of young women who remain unlikely to use the IUD. Our findings can inform interventions to increase use among this population.

Adolescent birth rates in the United States reached historic lows in 2010, having declined 44% since their peak in 1991 [1]. Although this progress is promising, the United States continues to have higher rates of adolescent pregnancy than other developed nations [2]. In 2010, 34.3 per 1,000 women aged 15–19 years gave birth, and 82% of all births to this age group are unintended [1]. More than one unintended pregnancy occurs for every 10 women between 18 and 24 years of age [3]. There are important disparities in rates of adolescent pregnancy, with the probability of a first birth by age 18 years being more than twice as high for black and Hispanic young women as for their white peers [4].

There are public health consequences of adolescent and of unintended pregnancy. Children of adolescent mothers are at risk for low birth weight, preterm birth, and associated health problems [5]. Women who give birth as teenagers are less likely

* Address correspondence to: Amy K. Whitaker, M.D., M.S., Department of Obstetrics and Gynecology, Section of Family Planning and Contraceptive Research, The University of Chicago, 5841 S. Maryland Avenue MC 2050, Chicago, IL 60637.
E-mail address: awhitaker@uchicago.edu (A.K. Whitaker).

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http://dx.doi.org/10.1016/j.jadohealth.2013.04.011

to complete high school, resulting in economic disadvantage for themselves and their children [6]. Women who continue unintended pregnancies are more likely to delay prenatal care, consume less than the recommended amount of folic acid, smoke pre- and postnatally, and deliver preterm. They are also at a higher risk for postpartum depression compared with women with intended pregnancies [7,8]. Unintended pregnancy has implications for taxpayers as well. An estimated 64% of births resulting from unintended pregnancies are publically funded, compared with 35% of births resulting from intended pregnancies. Unintended births account for $11.1 billion in public expenditures [9].

A large portion of the recent decline in adolescent birthrates is attributable to increased contraceptive use [10]. Although oral contraceptive pills remain the most common hormonal method of contraception among young women, use of non-oral hormonal methods is increasing [2]. However, adolescent and young adult women have high rates of discontinuation of hormonal methods, putting them at risk of unintended pregnancy [11]. Data from the 2004–2008 Pregnancy Risk Assessment Monitoring System (PRAMS) indicates that 45.2% of young women 15–19 years old who experience a live birth have used moderately or very effective contraceptive methods in the past [12], suggesting that these adolescents struggled with method use or adherence.

Long-acting reversible contraceptive (LARC) methods are recommended for use in young women to prevent pregnancy [13,14], and have shown promise in reducing unintended pregnancy [15–17]. Although LARC methods are proving more acceptable among adolescents and young women, overall use remains low. From 2002 to 2008, current use of the intrauterine device (IUD) rose from nearly none to 3.6% among 15–19-year-olds and from 1.8% to 5.9% among 20–24-year-olds [18]. Recent studies have examined factors associated with LARC use [19–22], but have not focused on young women. This study is an update to our analysis of correlates of IUD use among young women in the 2002 National Survey of Family Growth (NSFG) [23]. Factors associated with use of LARC methods among adolescent and young adult women likely vary over time, especially as more young women choose these options. We examine changes in factors associated with IUD use in young women from 2002 to 2010.

Methods

The data for this study come from the 2002 and 2006–2010 cycles of the NSFG, a cross-sectional, nationally representative survey. The NSFG is based on an area probability sample, representing the household population of the United States, 15–44 years of age, with oversampling of women, teens (15–19-year-olds), Hispanics, and African-Americans [24]. In-person, voluntary and confidential interviews were completed in English or Spanish with men and women, but we did not analyze data from male respondents. In 2002, there were 7,643 total female participants and in 2006–2010, there were 12,279. The response rate for women was 80% in 2002 and 78% in 2006–2010. The NSFG includes information on a woman's use of contraception, past pregnancies and pregnancy outcomes, and her social and demographic characteristics. Data were collected by female interviewers in the homes of survey respondents through Computer-assisted Personal Interviewing (CAPI), with Audio Computer Assisted Self-Interviewing (ACASI) technology used for more sensitive questions. Because our analysis was conducted using existing, publicly available, de-identified data, this study was exempt from Institutional Review Board review.

The sample for this analysis included sexually experienced (i.e., having had sexual intercourse at least once) women aged 15–24 years at time of interview. The NSFG contains detailed information on contraceptive use, including whether a respondent reports having ever used each type of contraceptive method. These variables were used to construct our main outcome variable: ever-use of any type of IUD.

We chose our exposure variables based on our prior analysis of the NSFG in order to make a longitudinal comparison [23]. These include sociodemographic variables (e.g., age, race/ethnicity, relationship status, maternal education, income, insurance coverage, religiosity), pregnancy variables (e.g., prior pregnancy history, parity), and sexual history (e.g., age at first intercourse and use of any contraceptive at first intercourse).

We used descriptive statistics to evaluate the demographic and reproductive health characteristics for our sample. We compared these variables between respondents in 2002 and those in 2006–2010 using the chi-squared test for categorical variables and the *t*-test for continuous variables. We performed additional bivariate analysis using the chi-squared test to determine the change in proportion of IUD users from 2002 to 2006–2010 among all women in our analysis and among subpopulations of respondents, based on sociodemographic and reproductive characteristics.

Using only respondents from the 2006–2010 cycle, we calculated unadjusted correlates of ever-use of the IUD using *t*-tests for continuous variables and chi-squared tests for categorical variables. We then performed multivariable analysis using logistic regression to generate adjusted odds ratios (ORs) and 95% confidence intervals (CIs) of correlates of ever-use of the IUD. Variables were initially included in the multivariable model if they were significantly associated ($p \leq .10$) with ever-use of the IUD in bivariate analysis. The final model was limited to variables that maintained significance at $p \leq .10$ after adjustment for the remaining covariates. All data analyses were carried out in Stata/SE 11.2 for Windows (StataCorp LP, College Station, TX) using the "svy" command to account for the NSFG's complex design and oversampling of certain respondent groups.

Results

There were 2,513 women aged 15–24 years interviewed in the 2002 NSFG and 4,382 in 2006–2010. Of these, there were 1,764 and 2,920 unweighted observations, respectively, for women reporting a history of sexual intercourse. Of women in our 2006–2010 analysis sample, 148 (4.5%) had ever used the IUD, an increase from only 1.4% in 2002 ($p < .001$) (Table 1). Among ever-users of the IUD, 68.9% (102/148) reported current use. Compared with the 2002 sample, respondents in 2006–2010 were living closer to the federal poverty level ($p = .02$) and were more likely to report having no or public insurance coverage ($p < .01$).

Among teens (aged 15–19 years) and young adult women (aged 20–24 years), ever-use of the IUD increased significantly, from .2% to 2.5% ($p < .001$) and 2.0% to 5.4% ($p < .001$), respectively (Table 2). Among teens, all of the increase in IUD use was accounted for among older teens aged 18–19 years (.1% to 3.6%, $p < .001$). Use among 17-year-olds did not increase (.8% to .9%, $p = .95$), and no respondents younger than 17 years reported ever having used an IUD in 2002 or in 2006–2010.

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