



Original article

## Trends in Long-Acting Reversible Contraception Use in Adolescents and Young Adults: New Estimates Accounting for Sexual Experience



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*Article history:* Received March 1, 2016; Accepted May 26, 2016

*Keywords:* LARC (long-acting reversible contraception); NSFG (National Survey of Family Growth); Youth-friendly services; Sexual experience

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### ABSTRACT

**Purpose:** The purposes of the analysis were to compare long-acting reversible contraception (LARC) use estimates that include all reproductive age women with estimates that are limited to women at risk for unintended pregnancy and to examine trends for adolescents (15–19 years) and young adults (20–24 years).

**Methods:** Using the 2006–2010 and 2011–2013 National Surveys of Family Growth, we compared LARC estimates for all women with estimates limited to women at risk for unintended pregnancy (those who were sexually experienced, and neither pregnant, seeking pregnancy, postpartum or infecund). We used *t* tests to detect differences according to the population included and to evaluate trends for adolescents and young adults.

**Results:** Among adolescents and young adults, 56% and 14%, respectively, have never had vaginal intercourse, versus 1%–4% for women aged 25–44 years. Given the high percentage of adolescents and young adults who never had vaginal intercourse, LARC estimates were higher for these age groups ( $p < .05$ ), but not for women aged 25–44 years, when limited to those at risk for unintended pregnancy. Among adolescents at risk, the increase in LARC use from 2006–2008 (1.1%) to 2008–2010 (3.6%) was not significant ( $p = .07$ ), and no further increase occurred from 2008–2010 to 2011–2013 (3.2%); by contrast, among young adults at risk, LARC use increased from 2006–2008 (3.2%) to 2008–2010 (6.9%) and from 2008–2010 to 2011–2013 (11.1%).

**Conclusions:** Because many adolescents and young adult women have never had vaginal intercourse, for these groups, including all women underestimates LARC use for pregnancy prevention. Among young adults, use of LARC for pregnancy prevention has increased but remains low among adolescents.

Published by Elsevier Inc. on behalf of Society for Adolescent Health and Medicine.

### IMPLICATIONS AND CONTRIBUTION

Because many adolescents and young adult women have never had vaginal intercourse, limiting calculations for these age groups to individuals who are sexually experienced and at risk for unintended pregnancy provides more accurate estimates of the use of long-acting reversible contraception and other contraceptives for pregnancy prevention.

**Conflicts of Interest:** The authors report no conflicts of interest.

**Disclaimer:** The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Recent estimates indicate nearly half (45%) of all pregnancies in the United States are unintended, and this percentage is substantially higher for adolescents (15–19 years, 75%) and young adults (20–24 years, 59%) as compared with older women (31%–42%) [1,2]. Calculations that have been limited to the population of women who are sexually active also suggest that unintended pregnancy rates are higher among adolescents and

young adults as compared with older women [3]. Given these patterns, data are needed to evaluate the impact of improved contraceptive use among adolescents and young adult women who have initiated sexual activity and are at comparatively high risk for unintended pregnancy.

Intrauterine devices and implants, known as long-acting reversible contraception (LARC), require no user effort after insertion and have typical-use failure rates that are comparable to sterilization (<1%) and lower than other commonly used methods, including oral contraceptives (9%) and condoms (18%) [4]. Despite concerns expressed by some providers about the suitability of LARC for young and nulliparous women [5,6], these methods are safe for women of all ages [7], including adolescents, and are recommended by the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics as first-line contraceptive options that can be combined with condoms to provide optimal protection against unintended pregnancy and sexually transmitted infections [5,8].

Recent analyses of the National Survey of Family Growth (NSFG) suggest that LARC use is increasing among U.S. women of reproductive age and remains highest for women aged 25–34 years [9–11]. However, to provide an overall picture of LARC use among women of reproductive age, these reports either included all women, or women using contraception, without taking into account their risk for having an unintended pregnancy. Accounting for unintended pregnancy risk may be especially important for adolescents and young adults: recent estimates indicate that >50% of adolescents and >10% of young adults (vs. 1%–3% of women aged 25–44 years) report they have never had vaginal intercourse [12] and therefore should be at very low risk for unintended pregnancy. Consequently, their inclusion enlarges the denominator and underestimates the use of LARC and other contraceptive methods for pregnancy prevention. Conversely, to the extent that contraception is being used for alternative reasons (e.g., control of acne, heavy menstrual periods), the inclusion of sexually inexperienced women enlarges the numerator beyond the extent appropriate for estimating the use of contraception for pregnancy prevention.

Given the large proportion of adolescents and young adults who report they have never had vaginal intercourse and are at very low risk for unintended pregnancy, the objectives of this analysis were (1) to compare LARC use estimates that include all women with estimates that are limited to women at risk for unintended pregnancy and assess the relative difference for adolescents and young adults versus women in older age groups and (2) to generate trend estimates for adolescents and young adults on the use of LARC for the purpose of pregnancy prevention and assess whether patterns of change differ for estimates that include all women versus the population of women at risk for unintended pregnancy.

## Methods

We used data from the 2006–2010 and 2011–2013 NSFGs. The NSFG is conducted by the Centers for Disease Control's National Center for Health Statistics in collaboration with other agencies of the U.S. Department of Health and Human Services. The survey is based on self-reported data and focuses on fertility, sexual activity, contraceptive use, reproductive health care, family formation, childcare, and related topics, using a stratified, multistage probability sample to create nationally representative estimates for women and men aged 15–44 years in the

United States. Interviews are conducted in person by female interviewers. Female respondents are asked to indicate each of the contraceptive methods they or their male partner used every month for up to 4 years before their interview and including the month of their interview. Women who report they are not currently pregnant but were sexually active and did not use a method during their interview month are asked if their reason for not using contraception is that they were trying to get pregnant. The 2006–2010 and 2011–2013 NSFGs contain 12,279 and 5,601 interviews of women with response rates of 78% and 73.4%, respectively [13,14]. We excluded earlier NSFGs because the number of adolescent LARC users was too low to produce reliable estimates [11].

For this analysis, we considered women at risk for unintended pregnancy if they reported they had ever had vaginal intercourse with a male partner and they were neither pregnant, seeking pregnancy, postpartum, or infecund. For each 5-year age group, we calculated the percentage of women we considered at risk for unintended pregnancy and the percentages in each category we did not consider at risk (i.e., the percentage of women who had never had vaginal intercourse, as well as the percentages of women who were pregnant, seeking pregnancy, postpartum or infecund). Among women who reported they had never had vaginal intercourse, we then calculated the percentage who were using contraception.

We defined LARC users as women who reported current use of an intrauterine device or implant. We then estimated LARC use across age groups, first including all women, and a second time limiting the population included to women at risk for unintended pregnancy. For these calculations, we combined the 2006–2010 and 2011–2013 data sets to allow for sufficient sample size for each 5-year age group and performed *t* tests to detect differences in LARC use by the population included. Finally, among adolescents and young adults, we assessed changes in LARC use over time, first among the full set of women in these age groups, and then a second time among the population at risk for unintended pregnancy. For these analyses we used *t* tests to compare June 2006–2008 versus July 2008 to June 2010 estimates, and July 2008 to June 2010 versus September 2011–2013 estimates, using the sample weights that allow the 2006–2010 survey to be separated into two time periods.

All analyses were conducted using SAS callable SUDAAN, version 9.3 (RTI International, Research Triangle Park, NC), to account for the complex sample and design variables of the NSFG. The NSFG was approved by the institutional review board at the National Center for Health Statistics of the Centers for Disease Control and Prevention.

## Results

Across age groups, the combined 2006–2010 and 2011–2013 data set indicated that progressively smaller percentages of women were excluded from the population at risk for unintended pregnancy because they either reported they had never had vaginal intercourse or they were pregnant, seeking pregnancy, postpartum, or infecund (Figure 1). The proportion included in the population at risk for unintended pregnancy was greatest for women aged 35–44 years, although >50% of women in this age group reported use of sterilization, which is as effective as LARC but is only an option for women who have completed their desired childbearing.

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