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Estimates of contraceptive failure from the 2002 National Survey of Family Growth

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Abstract

Background: In 2001, the US government's "Healthy People 2010" initiative set a goal of reducing contraceptive failure during the first year of use from 13% in 1995 to 7% by 2010. We provide updated estimates of contraceptive failure for the most commonly used reversible methods in the United States, as well as an assessment of changes in failure rates from 1995 to 2002.

Study Design: Estimates are obtained using the 2002 National Survey of Family Growth (NSFG), a nationally representative sample of US women containing information on their characteristics, pregnancies and contraceptive use. We also use the 2001 Abortion Patient Survey to correct for underreporting of abortion in the NSFG. We measure trends in contraceptive failure between 1995 and 2002, provide new estimates for several population subgroups, examine changes in subgroup differences since 1995 and identify socioeconomic characteristics associated with elevated risks of failure for three commonly used reversible contraceptive methods in the United States: the pill, male condom and withdrawal.

Results: In 2002, 12.4% of all episodes of contraceptive use ended with a failure within 12 months after initiation of use. Injectable and oral contraceptives remain the most effective reversible methods used by women in the United States, with probabilities of failure during the first 12 months of use of 7% and 9%, respectively. The probabilities of failure for withdrawal (18%) and the condom (17%) are similar. Reliance on fertility-awareness-based methods results in the highest probability of failure (25%). Population subgroups experience different probabilities of failure, but the characteristics of users that may predict elevated risks are not the same for all methods.

Conclusion: There was no clear improvement in contraceptive effectiveness between 1995 and 2002. Failure rates remain high for users of the condom, withdrawal and fertility-awareness methods, but for all methods, the risk of failure is greatly affected by socioeconomic characteristics of the users.

Keywords: Contraception; Contraceptive methods; Contraceptive effectiveness; Contraceptive failure; National Survey of Family Growth; NSFG

1. Introduction

Contraceptive failure is a primary cause of unintended pregnancy in the United States. Nearly half of all pregnancies are unintended, and nearly half of the 3.1 million unintended pregnancies in 2001 occurred to women who were using contraception [1]. Thus, reducing the risk of failure during contraceptive use would have a major impact on reducing unintended pregnancy in the United States.

The most recent estimates of contraceptive failure are for the mid 1990s [2–4]. These estimates have been essential for informing women's contraceptive decisions in the United States, as well as assisting providers in counseling, providing the most current information for teaching of sex education and informing the general public. However, these estimates are now over 10 years old and may not be an accurate reflection of American women's current experience in using reversible contraceptive methods. This article provides updated information on contraceptive failure using data from the most recent National Survey of Family Growth (NSFG), carried out in 2002. It also permits an assessment of trends in contraceptive failure between 1995 and 2002.

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In January 2000, the US Department of Health and Human Services launched the "Healthy People 2010" initiative, setting national goals for improvement in a broad set of health indicators of the US population, including the reduction of unintended pregnancy and of contraceptive failure. In particular, the initiative called for a reduction in the proportion of women becoming pregnant during the first year of use of a reversible contraceptive from 13% (as measured in 1995) to 7% by 2010 [5]. However, studies prior to 2000 did not find any noticeable improvements in contraceptive effectiveness from the 1980s to the early 1990s [2,4,6]. It is crucial then for policy makers to know if the effectiveness with which American women use specific contraceptives is improving, showing no change or declining. Information on the trend in contraceptive effectiveness since 1995 will contribute to decisions about the level of resources that may be needed to promote higher levels of effectiveness. Understanding trends can also inform service providers' decisions about the content of information and services offered to users in order to improve an individual client's chance of success with a particular method. It is also very important for service providers to have information on differences in contraceptive effectiveness among key population subgroups. Such information helps providers tailor counseling to the particular groups they serve.

Estimates of contraceptive effectiveness from a population-based survey capture the probability of failure during "typical" use of the method, including imperfect use. Therefore, these are not measures of the inherent efficacy of a contraceptive method when used perfectly (correctly and consistently). In contrast, clinical trials provide the best estimates of the probability of failure during "perfect" use of a method and are very useful as a standard against which typical or population-based estimates may be compared. However, typical use estimates of contraceptive failure based on women's behavior reported in population surveys are necessary for monitoring the actual experience of average contraceptive users, given their wide-ranging circumstances, characteristics, motivation and attitudes.

Population-based surveys such as the NSFG have some disadvantages, particularly the high level of underreporting of induced abortion; to obtain an accurate reflection of women's pregnancy experiences, the data must be adjusted to account for the discrepancy between reporting and actual occurrence of induced abortion. Our study uses an existing analytical approach that was developed in the 1980s to adjust for unreported abortions [6]. We use information from the 2000/2001 Abortion Patient Survey, combined with existing national data on the total number of abortions in the United States, to adjust for underreporting of contraceptive failures resolved by abortion in the NSFG.

We compare first-year probabilities of contraceptive failure estimated from the 1995 NSFG with newly calculated estimates from the 2002 NSFG. We also provide new estimates of contraceptive failure for several key population subgroups in the U.S. — segmented by age, parity, union status, race and ethnicity and poverty status — as well as examine changes in subgroup differences since 1995. Finally, we identify socioeconomic characteristics associated with elevated risks of failure for three commonly used reversible contraceptives in the United States: the pill, male condom and withdrawal.

2. Data and methods

2.1. National Survey of Family Growth

Nationally representative information on contraceptive use and pregnancies was obtained from Round 6 of the National Survey of Family Growth (NSFG), conducted by the National Center for Health Statistics in 2002–2003. The NSFG contains a sample of 7643 women, ages 15–44 and includes extensive information on the respondents' demographic and socioeconomic characteristics, their pregnancy and union status histories and a detailed month-by-month contraceptive use calendar from January 1999 to the date of interview (median=September 2002). Using these data, we constructed a new data file consisting of the intervals of contraceptive use observed during the roughly 3 and 3/4-year period covered by the contraceptive use calendar. These intervals or "segments" of contraceptive use constitute our unit of analysis for the measurement of contraceptive failure (see Appendix).

2.2. Correcting for underreporting of abortions in the NSFG

The most accurate estimate of the number of abortions that occur each year in the United States is calculated periodically by the Guttmacher Institute, through national surveys of all known abortion providers in the United States [7].[1] We know from previous analyses that only 47% of the 6.5 million abortions that occurred during the 5 years preceding the 2002 NSFG were reported by the survey respondents [8]. Because at least half of the pregnancies terminated by induced abortions occurred during use of contraception [9], estimates of failure relying only on NSFG data are likely to be underestimated by the omission of abortions by NSFG respondents. In addition, characteristics of women that are associated with higher or lower rates of abortion underreporting are also associated with the probability of contraceptive failure [2–4,6,8,10,11] so that underreporting can also lead to misleading differentials in the risk of failure among subgroups.

To correct the number of abortions resulting from contraceptive failure in the NSFG, we first calculated the total number of abortions that occurred in the United States for the time period covered in our analysis. The corrected numbers of abortions were then distributed among the appropriate population subgroups by employing the

[1] Data on the number of abortions that occur in the United States are nearly complete and are estimated to be within 3–4% of the actual number [7].