

Overview of Contraception

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The United States has the highest rates of adolescent pregnancy and birth of any country in the industrialized Western world; adolescent pregnancy rates in the United States are more than two to three times the rates of Canada or Europe and eight times higher than rates in the Netherlands and Japan [1]. It has been estimated that approximately one third of American girls will experience at least one pregnancy before the age of 20, even taking into account declining adolescent pregnancy rates from the early 1990s to 2002 [2]. Approximately 820,000 adolescent pregnancies occurred in the United States in 2003 [3]. The rate of adolescent births in the United States has fallen since its high in the early 1950s and since a recent peak in the 1990s to a new low of 41.7 births per 1000 adolescents aged 15 to 19 years; this represents a 33% drop since 1991 [4] (Fig. 1). The rate for 10- to 14-year-olds has declined by 57% [4] (Fig. 2). Depending on how the question is phrased and when it is asked, 70% to 90% of adolescent pregnancies are unplanned [5,6]. In the latest year for which statistics are available, 2000, 57% of adolescent pregnancies ended in birth; approximately 14% end in spontaneous abortion, and 29% end in abortion [3]. When contraception fails, adolescents may elect to terminate their pregnancies. Abortion rates impact adolescent birth rates, and abortion rates for adolescents fell during the 1990s [12] (Fig. 3). The abortion ratio—the ratio of abortions to live births—is higher among adolescents than older women, and is highest among those younger than 15 [12].

Few adolescent pregnancies result in infants being placed for adoption; less than 1% of teens chose to place their children for adoption in a 1995 survey [7].

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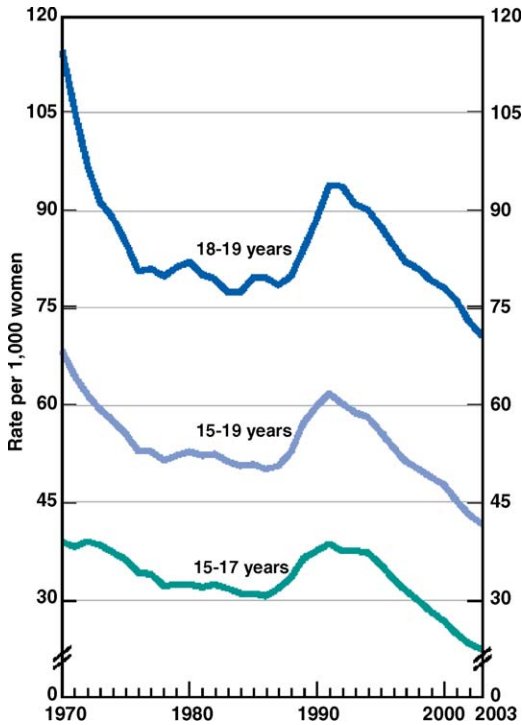


Fig. 1. Birth rates for teenagers by age: United States, 1970 to 2003, National Vital Statistics Reports, Vol. 53, No. 9, November 23, 2004.

This percentage represents a sharp decline since the 1940s. Fewer black women and teens placed a child for adoption than did white women and teens [8].

The percentage of adolescents who were sexually active increased from the early 1970s through the late 1980s, and the overall teen pregnancy rate must be interpreted in this context [9]. In 1970, the first year of the National Surveys of Family Growth (NSFG), fewer than 50% of 19-year-olds had had sexual intercourse. By the mid-1980s, more than 50% of 17-year-olds were sexually experienced. Since that time, it appears that rates of sexual activity have plateaued [10]. It has been estimated, that the sharp decline in adolescent pregnancy rates, in spite of stable rates of sexual activity, is due in part to more effective contraceptive use. Darroch has estimated that 75% of the decline in adolescent pregnancy rates is due to more effective contraception, whereas 25% is due to an increasing focus on and choice of abstinence [10]. Santelli estimated that improved contraceptive practice and delayed initiation of sexual intercourse contributed equally to declining adolescent pregnancy rates [11]. In the United States, there has been an increased use of condoms and an increased use of long-acting hormonal methods such as depot medroxyprogesterone acetate (DMPA) and the combination contraceptive patch, with a resultant decline in method-related contraceptive failures [10].

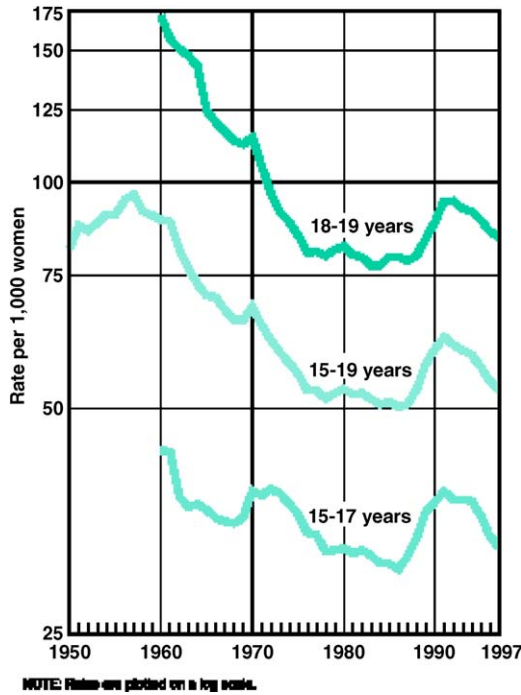


Fig. 2. Adolescent birth rate, 1950 to 1997. National Center for Vital Statistics Report, Vol. 47, No. 12, December 17, 1998.

Data from the most recently reported NSFG indicated that somewhat more than 20% of 15-year-olds have had intercourse and thus remain at risk for pregnancy [13]. The younger the adolescent is at the time of sexual initiation, the more likely she is to have more partners over her lifetime [13]. This statistic is complicated, however, by the fact that younger adolescents are more likely to

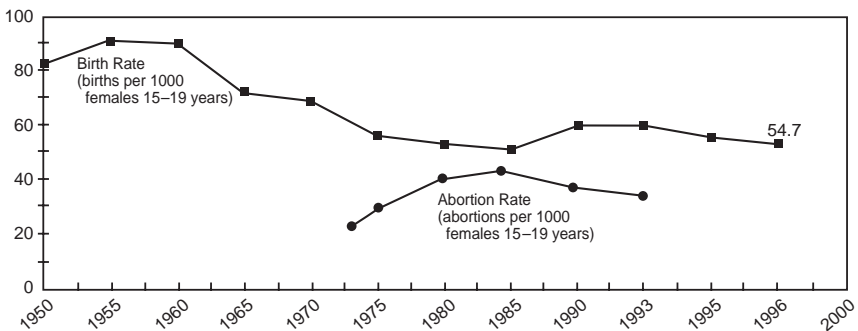


Fig. 3. Trends in birth rates and abortion rates among adolescent females aged 15 to 19 years. (From American Academy of Pediatrics Committee on Adolescence. Adolescent pregnancy—current trends and issues: 1998. Pediatrics 1999;103(2):516-803.)

have a partner who is significantly older than they and are more likely to have had unwanted or coerced sexual activity [13]. Among adolescents younger than 18, two thirds of those with a partner 6 or more years older used contraction at most recent sex, compared with 78% of those with a partner within 2 years of their own age [14]. For these reasons and because of many other psychosocial and developmental factors, the youngest teens are most likely to be ineffective users of contraception.

There has been less progress in improving US rates of adolescent pregnancy than among many other countries [15]. Other countries have addressed adolescent pregnancy with better access to health care and contraceptive services, better sexuality education, and higher rates of contraceptive use, especially oral contraceptives [16].

Although it is clear that adolescent pregnancy impacts the individual adolescent (and her partner, to a lesser degree), her infant, and society, unintended pregnancy is a problem for women of all ages. Adolescent pregnancies make up only about 21% of all unintended pregnancies in the United States [17]. Babies born to teen mothers are more likely to be premature and of low birth weight with the myriad of medical problems that entails, less likely to finish high school and more likely to do poorly in school, more likely to be abused or neglected. The sons are more likely to go to prison, and the daughters are more likely to themselves be teen mothers [18]. Two thirds of families begun by unwed adolescent mothers live in poverty; almost half of all teen mothers and more than three quarters of unmarried teen mothers receive welfare within 5 years of the birth. Teen childbearing costs taxpayers approximately \$7 billion per year in direct costs for health care, foster care, criminal justice, public assistance, and lost tax revenues [18].

Adolescent medical care for contraception/confidentiality

Adolescents typically wait 1 year or more after initiating sexual intercourse before seeking medical advice about contraception [17]. More recent data from the early 1990s suggest that the median time from initiation of intercourse until the first family planning visit is 22 months, a percentage that had increased somewhat over time, largely because of increases in the reliance on provider-independent methods of contraception (primarily condoms) [19,23].

It has been estimated that 50% of adolescent pregnancies occur within the first 6 months after the initiation of sexual intercourse [20]. Adolescents are starting to get the messages about the need for contraception in spite of abstinence curricula that may not address contraception, leaving considerable knowledge gaps. In the early 1980s, more than half (52%) of adolescents used no method of contraception at the time of first intercourse [21]. This reflects the mixed messages about sexuality that adolescents receive in the United States: good girls do not have intercourse, and that to have unplanned intercourse is less morally reprehensible than to plan to have sex using effective contraception. In the 1980s,

however, adolescents began to hear about the use of condoms, which were discussed primarily with regard to minimizing the risks of acquiring sexually transmitted diseases and HIV rather than preventing pregnancy. A discussion of condoms for contraception remained off-limits, but the use of condoms for sexually transmitted disease (STD) protection and contraception has increased over time. The 1988 method at the time of first intercourse, according to the National Survey of Family Growth was the first national survey to assess such dual use [22]. By the mid-1990s, only 23% of adolescents reported the use of no method at the time of first intercourse, according to the National Survey of Family Growth [23].

Adolescent contraceptive choices

Contraceptive choices of adolescents have changed over time, and there are numerous determinants of contraceptive use among adolescents [24,25]. Age is an important determinant of contraceptive use, and younger teens are less likely to use contraception at first intercourse. Black and Hispanic females are as likely to use contraception as white females. Socioeconomic status also is associated with contraceptive use; teens of higher socioeconomic status (as evidenced by their mother's educational attainment) are more likely to delay the initiation of intercourse and to use effective contraception. Parental education and family structure (eg, growing up in a two-parent household) influence the initiation of intercourse and condom use. Religious affiliation and religiosity influence the initiation of intercourse; teens who describe themselves as strongly religious are less likely to have early sex but are also less likely to use contraception at first intercourse.

Data for adolescent use of contraception are available from the 1995 cycle of the NSFG [24,25]. Approximately 97% of all teens have used some method of contraception and are trying to prevent pregnancies. Ninety-four percent have used condoms. Oral contraceptives have been used by 52% of teens surveyed. Forty-three percent of teens have used a relatively ineffective method—withdrawal—to prevent pregnancy. Thirteen percent of teens have relied on periodic abstinence for birth control, although studies suggest that many adolescents cannot identify the most fertile time of their cycle. Adolescents are using dual methods, that is, relying on hormonal contraceptives to minimize the risk of pregnancy and barrier methods to minimize the risks of acquiring STDs. The 1988 NSFG was the first national survey to incorporate questions about dual method use [26]. One report found that the highest rates of dual use of condoms plus another method occurred among oral contraceptive users [27]. Dual use among adolescents has increased over time as evidenced in the Youth Risk Behavior Survey (YRBS), with older students more likely to use condoms and another method; however, dual use remains low, at 7% [28].

Oral contraceptive use as assessed in the NSFG declined from 43% in 1988 to 25% of sexually active teens in 1995; condom use rose from 31% to 38%; long-

acting/injectable methods rose to 7% [25]. Unfortunately, the use of no method rose from 20% to 29% [25].

Patterns of contraceptive use also contribute to contraceptive efficacy. More than two-thirds of adolescents aged 15 to 19 years reported long-term uninterrupted contraceptive use; however, they are more likely than older women to report sporadic use and less likely to report uninterrupted use of a very effective method of contraception (implant, injectable, intrauterine device [IUD], or oral contraceptives) [29]. Contraceptive use pattern was found to more strongly correlate with unintended pregnancy than did contraceptive use at first intercourse. Among adolescents initiating intercourse between the ages of 15 and 19, half of those who did not use a contraceptive became pregnant compared with 13% of those who did; 85% of long-term nonusers became pregnant within 12 months compared with 33% of sporadic users and fewer than 15% of uninterrupted users [29].

Newer methods of contraception

Newer methods have become available that take advantage of technologies that do not require daily pill taking. It has been estimated that incorrect or inconsistent use or discontinuation of oral contraceptives results in approximately 1 million unintended pregnancies per year in the United States [30]. Contraceptive options developed in the last 10 years include: the transdermal patch, the progestin-containing intrauterine system, the combination estrogen–progestin vaginal ring, and the combination estrogen–progestin intramuscular monthly injection. The last option has been taken off the market because of manufacturing-related concerns. One other long-acting method that was popular among adolescents and whose use is reflected in the NSFG and YRBS was levonorgestrel subdermal implant, which is also no longer available. Liability issues led to its withdrawal, in spite of data showing ongoing effectiveness, satisfaction, popularity, and use among adolescents. A single rod implant has undergone extensive testing with a demonstrated Pearl index of 0 pregnancies per 100 woman years. It has been available in Europe since 1999 and was issued an approvable letter by the US Food and Drug Administration (FDA) in November 2004; thus it likely will be available in the near future.

Long-acting hormonal contraceptive methods with low failure rates—the implant and the injectable—became available in the 1990s, accounting for 13% of current contraceptive users by 1995. The declining rates of adolescent pregnancy during the 1990s have been attributed in large part to the shift to long-acting methods, with a resultant increase in overall contraceptive effectiveness [10]. Although the contraceptive implant is no longer available, it is hoped that the increasing use of the other less compliance-dependent methods—the patch, the vaginal ring, and the injectable—will allow for a continuation of the trends in adolescent pregnancy rates.

In years past, one suggested goal of contraceptive development has been that the method would have little or no effect on the menstrual cycle. More specifically, it has been felt to be desirable to mimic a normal 28-day cycle. Combination oral contraceptives have thus been formulated in a manner to provide an artificial but typically regular monthly cycle. Effects such as breakthrough bleeding contribute to method dissatisfaction and discontinuation [31]. For many years, however, clinicians have used hormonal manipulation of the menstrual cycle to provide therapeutic amenorrhea for individuals with underlying medical problems [32]. Oral contraceptives, depot medroxyprogesterone acetate, and more recently levonorgestrel-containing intrauterine systems have been used in this fashion. In addition, a new packaging of an old combination oral contraceptive formulation has been marketed as containing 84 days of hormonally active pills followed by 7 placebo pills, leading to four periods a year. The desirability of an extended cycle hormonal method is not universal; however, some adolescents may prefer to have fewer menstrual cycles, minimizing menstrual-related symptoms and premenstrual molimina. The impact of this newer option on contraceptive use and compliance among adolescents is not established. Breakthrough bleeding is common in the first few months of use, which may lead to pill discontinuation.

Emergency contraception (EC) can be used when a method fails (such as a condom that breaks or slips off) or when no method of contraception is used. If EC is used in these situations, it has been estimated that approximately 1 million abortions and 2 million pregnancies ending in childbirth could be prevented per year in the United States [33]. Increased access to EC with over-the-counter (OTC) sales was supported by over 70 medical organizations including the American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists (ACOG), American Medical Association (AMA), and American Academy of Family Physicians (AAFP). Two FDA advisory panels supported OTC availability. Unfortunately, the panels' recommendations and medical science were overlooked in favor of what most scientists consider to be political decision-making, and the company's application to the FDA for OTC status was denied [34]. In response to the FDA's actions, the company's proposed restrictions on the availability based on age may be successful in allowing the availability of EC for those over the age of 16.

Effects of contraception on sexual behavior and risks

Although FDA officials expressed concerns about the unknown potential health risks of ECs for young adolescents and concern about the effects of ECs on sexual behaviors, studies have shown that adolescents are not more likely to engage in risky behaviors such as unprotected intercourse, or less condom or hormonal contraceptive use if they have an advance prescription for ECs available for use [35]. Instead, they were more likely to use EC when needed, and to

use it sooner, when it will be more effective than if they needed to contact a health care provider for a prescription.

The use of both a hormonal method of contraception to minimize the risks of pregnancy and condoms to minimize the risks of STDs—dual method use approach—has been investigated. Oral contraceptive users are more likely to use a dual method approach than are users of other contraceptive methods [28]. The type of partner (casual or main) and perceived STD risk influence dual use [36]. Adolescents are less likely to use condoms in addition to hormonal contraception with their main partner than with casual partners because of perceived lower risk of STDs. An awareness of the impact of relationship differences on contraceptive and risk-taking behaviors will enable clinicians to better counsel and advise adolescents.

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