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PUBLIC HEALTH IMPORTANCE

Public health researchers and practitioners need to know about the prevalence, choice, and effectiveness of contraception for a number of compelling reasons. Use of contraception is the most important factor affecting the U.S. birthrate. Oral contraceptives (OCs), the leading method, are among the most studied drugs in the United States. Female sterilization by tubal ligation, the second leading method of contraception, is also the second leading reason for hospitalization among women of reproductive age—second only to childbirth. In a recent review of the literature, investigators argued that in general, use of contraception slightly reduces health risks, except for OC users at risk of heart disease and intrauterine device (IUD) users at risk of sexually transmitted diseases (STDs) (1). The use of condoms reduces the risk of transmitting STDs including human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS). Moreover, when women make medical visits to obtain birth control services, they often receive important health screening and primary medical care (2, 3). For additional information about related topics and surveillance activities, see the Infertility, Unintended Pregnancy and Childbearing, and Pregnancy in Adolescents chapters.

HISTORY OF DATA COLLECTION

National data on the use of contraception were first gathered in the Growth of American Families (GAF) study in 1955. The GAF study was intended to help explain trends and differences in birthrates in the United States by collecting

data on contraception, infertility, and births expected in the future. The GAF survey, which was sponsored by the Rockefeller Foundation and conducted by the Scripps Foundation and the University of Michigan, was repeated in 1960. Renamed the National Fertility Survey, the survey was conducted in 1965 and 1970 by the Office of Population Research at Princeton University, and it was funded by the National Institute of Child Health and Human Development, part of the National Institutes of Health. These surveys documented the ineffective contraceptive practices of the 1950s; increased use of the pill, IUD, and sterilization by married couples; and the role of these methods in reducing unintended childbearing in the United States from 1960 through 1973 (4). This information was used extensively in reports by the Commission on Population Growth and the American Future (5), and it was used to help establish the Title X Population Research and Family Planning Programs in 1970 (4).

These surveys produced so much valuable data on contraception and other factors affecting the birthrate and women's health that they were taken over by the National Center for Health Statistics (NCHS) in the early 1970s. The first National Survey of Family Growth (NSFG) was conducted in 1973, and the second was conducted in 1976. These surveys included all currently and formerly married women; women who had never been married were included only if they had had one or more births. (In other words,

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women who had never been married and had never had children were excluded. The rationale for this exclusion was that the women included in the survey presumably were or had been sexually active at some time in their lives.) About 9,800 women were interviewed in 1973, and 8,600 were interviewed in 1976. These findings have been reported in numerous reports and articles (6).

Beginning with the 1982 NSFG, NCHS decided to expand the survey to include women of all marital statuses. So the 1982 and 1988 NSFGs were conducted with national samples of about 8,000 women of all marital statuses and included data on all major factors affecting the birthrate and closely related health topics: heterosexual intercourse, marriage and divorce, contraception, sterilization, infertility, breast-feeding, miscarriage and stillbirth, and the social and health factors that affect them (7). The NSFG is the principal national source of data on the use of contraception, its effectiveness in actual use, and where women obtain contraceptives.

CDC SURVEILLANCE ACTIVITIES

The NSFG is conducted by the Family Growth Survey Branch of NCHS, which recently became part of CDC. The data are collected in face-to-face interviews with national samples of noninstitutionalized U.S. females 15–44 years of age. (Homeless and institutionalized women are not covered.) The interviews are conducted by professional female interviewers specially trained to administer the questionnaire. In 1988, of the 8,450 women interviewed, 2,771 were black, 5,354 were white, and 325 were of other races. Interviews lasted an averaged of 70 minutes and were conducted by using a pre-printed standardized questionnaire. The content of the interview included a detailed contraceptive history, including the first contraceptive method ever used, methods used between each pregnancy, and the current method used. For the 4-year period just before the interview, questions were also asked, month by month, to determine whether the woman was using contraception, and if so, which method; and whether she was pregnant, sterile, not having intercourse, or not using a method.

This kind of information allows us to calculate contraceptive failure rates using life-table methods (8).

Some NSFG findings in this and other chapters of this monograph, are shown by race and Hispanic origin. Differences between non-Hispanic white women vs. black and Hispanic women are often associated with the lower income and educational levels of minority women, their limited access to health care and health insurance, the neighborhoods in which they live, and other factors. The causes of these differences merit further research; however, the data shown here should be useful to health providers who wish to target the delivery of medical services such as birth control counseling and STD and cancer screening.

One limitation of the NSFG is that the sample is not large enough to provide data for individual states. CDC has undertaken some state surveys, which are described in the Interpretation Issues section of this chapter.

GENERAL FINDINGS

Contraceptive Use at First Intercourse

Contraceptive use at first intercourse is an important indicator of early use of contraception in general. One recent study found that adolescents who do not use contraception at first intercourse are four times as likely to have a premarital pregnancy as those who do use a method, and that one fifth of all premarital first pregnancies to teenagers occur in the first month after they begin intercourse. Use at first intercourse is also important as a measure of protection from STDs, including HIV—particularly because the most common method used at first intercourse is the condom. Other common methods used at first intercourse are the pill, and—among whites only—withdrawal (9).

TRENDS

The percentage of females (or their partners) who used a contraceptive at first intercourse increased in the 1980s, from 53% in 1980–1982 to 65% in 1983–1988. This increase occurred primarily

among white females (55% in 1980–1982 to 70% in 1983–1988), mainly because of a sharp increase in condom use by their partners (27% in 1980–1982 to 42% in 1983–1988) (Table 1). No significant change in use at first intercourse was observed among black females in the 1980s.

GROUP DIFFERENCES

Hispanic females were the least likely to use a method at their first intercourse of any group identified (32%); white Jewish females were most likely to do so (68%). Females who had intercourse before the age of 15 years, who grew up in single-parent families, who were fundamentalist Protestants, and whose mothers did not graduate from high school were the least likely to use a method at first intercourse. These differences emphasize the crucial role of social and economic opportunity as well as family, neighborhood, and cultural factors in contraceptive use (9).

Contraceptive Use at the Time of Interview

Most women reported that they had used contraception by the date of interview. In 1982 and 1988, about 7% of females aged 15–44 years were at risk of unintended pregnancy and were not using a contraceptive method. (Women are not at risk of unintended pregnancy if they are sterile, pregnant, trying to become pregnant, or not having intercourse.) Many unintended pregnancies result from this relatively small group of nonusers of contraception. The remaining unintended pregnancies are the result of inconsistent or incorrect contraceptive use (see the Efficacy section of this chapter).

TRENDS

The sweeping and very dramatic changes in contraceptive use in the past half century have been documented in the eight national fertility surveys

TABLE 1. Percentage of females* who used a method of contraception at first premarital intercourse, by method, race, and year of first intercourse — United States, 1965–1988

Race and year of first intercourse	Any method	Pill	Condom	Withdrawal	Other
All races†					
1965–1969	45.8	8.6 [§]	24.0	9.5	3.7
1970–1974	44.4	12.1	21.0	7.3	4.0
1975–1979	46.5 [¶]	12.8	22.0	7.5	4.2
1980–1982	53.1 [¶]	14.2	26.7 [¶]	8.4	3.8
1983–1988	65.4	12.1	41.8	8.9	2.8
Non-Hispanic white					
1965–1969	49.6	9.5	24.6	11.3	4.2
1970–1974	47.1	12.8	22.8	8.1	3.9
1975–1979	50.2 [§]	13.6	23.7 [§]	8.0	4.8
1980–1982	55.0 [¶]	14.5	27.7 [¶]	8.7	4.1
1983–1988	69.8	11.2	45.4	10.0	3.2
Non-Hispanic black					
1965–1969	35.8	7.1	24.7 [§]	2.1	1.6
1970–1974	34.9 [§]	10.9	17.0 [§]	4.0	3.0
1975–1979	45.3 [§]	14.6	24.3	2.5	3.8
1980–1982	54.2	18.9	29.2	3.4	2.6
1983–1988	58.0	22.8	32.4	2.9	0.9

* Includes females aged 15–44 years who have had premarital intercourse; percentages for the four methods may not total the percentage for *any method* because of rounding.

† *All races* includes respondents of *other* races as well as females of Hispanic origin.

§ Significance refers to the difference between the marked category and the category below it; $p < 0.05$.

¶ $p < 0.001$.

Source: National Survey of Family Growth.

discussed in this chapter. In the 1950s, the leading methods were the condom, the diaphragm, and the rhythm method, and nonuse was quite common (10); the result was the highest birthrate since the turn of the century. By 1973, more effective contraception drove the birthrate down to fewer than two children per woman. The pill was by far the leading method, but male sterilization, female sterilization, and the use of IUD had become more common (11). By 1982, use of the pill had dropped sharply, and female sterilization had increased. By 1988, use of the IUD virtually disappeared because the two major American makers of IUDs withdrew them from the U.S. market; use of the pill increased among college-educated white women, and female sterilization increased among minorities and less educated women. Condom use increased among young women in the 1980s as diaphragm use decreased (12).

Why has sterilization—especially female sterilization—become so popular? Female sterilization alone is the second leading method, just behind the pill, and when male and female sterilization are combined, they lead all other methods of contraception. For example, the percentage of married couples with a sterilization operation of some kind—tubal ligation, hysterectomy, or vasectomy—soared from 16% in 1965 to 42% in 1988. About 65% of couples with wives aged 35–44 years (nearly two out of three) opted for surgical sterilization in 1988 (13). The reason for this increase lies partly in the high failure rates for other methods. But another important reason is that the period of childbearing has been compressed to a very small number of years, usually while the woman is in her 20s. By age 30, three fourths of women who have ever been married have had all the births they want. The typical woman being sterilized is married, is about 30 years of age, and has two or three children. This leaves many married couples with about 15 years in which they are fertile but do not want any more babies. They want a method that is safe and very effective in preventing pregnancy. Moreover, sterilization is often performed as an outpatient procedure, which is frequently covered by health insurance, so its cost to the patient is modest. For many married couples and for other women who are sure that they want no

more children, sterilization may be a reasonable choice (7, p. 210) (see also the Unintended Pregnancy and Childbearing chapter).

GROUP DIFFERENCES

In 1988, low-income and minority groups relied heavily on tubal ligation. Of all women using contraception, 52% of women with less than a high school education opted for female sterilization, compared with only 21% of college-educated women (Table 2); and about 38% of black women opted for female sterilization, compared with 26% of white women. These patterns strongly suggest that the temporary contraceptive methods available then were not meeting women's needs.

Efficacy

The efficacy of contraceptive methods has been measured by every NSFG since the 1970s. In the most recent study, the failure rates—the average probability of having an unintended pregnancy in a year of using a particular method—were as follows: the pill, 7%; the condom, 16%; the diaphragm, 22%; periodic abstinence (calendar and temperature rhythm methods as well as natural family planning), 31%; and spermicides, 30%. Thus, the average annual failure rate varied from 1 in 14 for the pill to 1 in 5 for the diaphragm and 1 in 3 for periodic abstinence methods. The average failure rate for all methods except sterilization was 14%; the failure rates for black (18%), Hispanic (17%), low-income (21%), and teenage females (26%) were higher than they were for other groups (8). For example, low-income women's heavy reliance on sterilization may be explained in part by the fact that their contraceptive failure rate is 21%, compared with 10% for women with higher incomes (see Table 4 in reference 8).

Use of Family Planning Services

The NSFG also has the only patient-based national data on use of family planning and birth control services in the United States. About 20 million females aged 15–44 years (35%) had one visit or more for family planning services in 1988, about the same number as in 1982 (14). Women aged 20–24 years were the most likely to have

TABLE 2. Percentage of contraceptive users aged 15–44 years who rely on various methods, by selected characteristics — United States, 1982 and 1988

Characteristics	Female sterilization		Male sterilization		Pill		IUD		Condom	
	1982	1988	1982	1988	1982	1988	1982	1988	1982	1988
Total	23	28*	11	12	28	31	7	2*	12	15*
Age (years)										
15–19	0	2	0	0	64	59	1	0	21	33*
20–24	5	5	4	2	55	68†	4	0*	11	15
25–29	14	17	6	6	35	45*	10	1†	11	16*
30–34	31	33	15	14	16	22*	9	3†	12	12
35–39	42	45	18	20	6	5	8	3*	12	12
40–44	45	51	23	22	1	3	6	4	11	11
Marital status										
Never married	4	6	2	2	53	59	5	1†	12	20†
Currently married	27	31*	16	17	19	21	7	2†	14	14
Formerly married	39	51*	3	4	28	25	12	4*	2	6*
Education (years)§										
0–11	40	52*	8	7	22	23	12	4*	9	6
12	27	34†	14	15	28	29	6	2†	9	11
≥13	19	21	11	13	24	29*	8	2†	14	16
Income (% of poverty level)										
0–149	26	37†	6	4	36	36	8	3*	9	13*
150–299	25	32*	10	12	26	29	7	2†	12	14
≥300	21	22	14	14	26	30	7	2†	14	16
Fertility intentions										
More children	0	0	0	0	51	59*	6	1†	15	22†
No more children	40	46*	19	19	13	13	7	3†	10	10
Race/ethnicity										
Hispanic	23	32	5	4	30	33	19	5†	7	14*
Non-Hispanic white	22	26*	13	14	26	30	6	2†	13	15
Non-Hispanic black	30	38†	2	1	38	38	9	3†	6	10*

* Change from 1982 to 1988 is significant ($p < 0.05$).† Change from 1982 to 1988 is significant ($p < 0.01$).

§ Education data are for women aged 20–44 years only.

Source: National Survey of Family Growth.

had a family planning visit (59%), typically to obtain OCs, which require regular visits. The percentage of women who had a family planning visit declined to 53% for those aged 25–29 years, 35% for those aged 30–34 years, 17% for those aged 35–39 years, and 6% for those aged 40–44 years.

SOURCE OF SERVICE

Women in varying income groups were about equally likely to obtain family planning services in 1982 and 1988, but they differed strongly in where they obtained these services. The family planning programs, established by Title X of the Public Health Service Act in 1970, were created to serve minorities, low-income women, and teenagers—groups that rely most heavily on subsidized public clinics for their family planning services. Of the 20 million women who used family planning services in 1988, about 64% obtained those services from a private physician, group practice, or health maintenance organization; 36% used a clinic. About 53% of black women and only 32% of white women used a clinic at their most recent visit; 60% of low-income women and 27% of higher-income women used a clinic. About 62% of teenagers obtained their family planning services from clinics. These differences probably are related to the fact that minority and low-income women are less likely to have health insurance or adequate income to pay the fees of a private physician, and they are less likely to have a regular source of medical care. Other factors, such as the location of private physicians' offices and clinics and the availability of transportation, may also help to explain the greater use of clinics by low-income women and minorities (14).

OTHER MEDICAL SERVICES

NSFG data show that women who obtain family planning services often obtain related medical services that they might otherwise not obtain at all. For example, 54% of women who obtained family planning services at a clinic had received a test for an STD in the last 12 months, compared with 34% of those who obtained family planning services from a private physician, and only 16% of those who obtained no family planning services in the past year (2). Family planning visits

are also important occasions for other health screenings: >90% of women who received family planning services in the last 12 months received a Papanicolaou (Pap) smear or pelvic examination, a breast physical examination, or a blood pressure test, regardless of who provided the service or who paid for the visit. Only about half of women who received no family planning services had had these tests in the last 12 months (3). These findings suggest that many women are getting some or all of their primary medical care during family planning visits.

INTERPRETATION ISSUES

The NSFG data on contraceptive use, choice, efficacy, and family planning services have several strengths. First, they are based on large national samples of 8,000 women or more. Second, the large sample of black women permits reliable estimates for subgroups of black women. Third, the large overall sample size allows national estimates that have small sampling errors and small confidence intervals, and it allows estimates for many subgroups. Fourth, the ability to identify women who used Title X clinics (in 1988 only) has permitted detailed profiles of the demographic and health characteristics of that population. Fifth, we can identify the region, metropolitan status, and income level of women in the sample, which allows us to estimate the number of women at risk of unintended pregnancy and the number of women in need of family planning services for regions and other subgroups (15). Sixth, the NSFG estimates of contraceptive efficacy are based on actual national averages—not small self-selected, highly motivated groups—so they give an accurate picture of the chances of an average patient's having an unintended pregnancy with a particular method of contraception. Seventh, in sharp contrast to some surveillance systems, the NSFG data have a rich supply of independent variables—characteristics to help explain contraceptive behavior.

The data do, however, have some limitations. First, although the data cover more independent variables—more characteristics to explain contraceptive use—than most surveillance data systems do, even more detail would be helpful. More detail is to be collected in the 1994 NSFG.

Second, the data collected before the 1994 survey have not been available at frequent enough intervals. Therefore, the 1994 survey is to be followed by telephone follow-up interviews 20 and 40 months after initial interview. Third, not all abortions have been reported in these surveys until now, and this has led to questions about the accuracy of the data on contraceptive effectiveness. Efforts have been made, however, to correct the contraceptive failure rates, and they appear to yield good results (8). Furthermore, in the 1994 NSFG, surveyors are attempting to increase the reporting of abortions by using self-administered questionnaires, rewording questions, and employing other means. Fourth, the NSFG has large enough samples of white and black women to make separate, detailed estimates for these groups but not enough cases to make estimates for specific subgroups of Asians or American Indians. Past NSFG surveys have not included enough Hispanic women to make estimates for subgroups, but the 1994 NSFG does.

Fifth, although the sample sizes are large, they are not large enough to permit estimates for individual states or local areas. If estimates for a state are needed, we recommend using estimates from the latest NSFG. If your state's composition by race, age, or other characteristics differs substantially from national averages, the NSFG public use tape can be used to make estimates for the metropolitan and nonmetropolitan regions of each of the four census regions, specific for race or age. If your state's population has a large Hispanic population (Texas, Arizona, New Mexico, Florida, and New York), a large Asian population (Hawaii and California), or large numbers of a particular religious group (i.e., Mormons, Utah and Idaho), and if you know that those groups have different patterns of contraceptive use than white or black women of the same age and education level, then state-specific data may be needed. For most states, however, estimates from the NSFG should be very useful.

Data for states or Public Health Service regions may be available from the NSFG in the future. In the meantime, CDC can assist states with particular needs in two ways: first, by conducting workshops to train people to use NSFG data to

make estimates of family planning needs and contraceptive use at the state level; and second, by helping states to conduct state-level surveys that collect data necessary to measure contraceptive use at the date of interview.

These state-level surveys are conducted by telephone and are based on questionnaires similar to the NSFG but shortened and simplified. One such survey, covering females aged 15–44 years, was conducted in New York State (excluding New York City) in 1988 (16); another was conducted in Idaho in 1985 (17). Others have been conducted in Hawaii and Arizona. CDC also provided assistance for a survey based on face-to-face interviews with 3,175 women aged 15–49 years in Puerto Rico in 1982 (18). The results of this survey have been used to develop family planning policy in Puerto Rico.

Data on contraceptive use for high school students in grades 9–12 are available from CDC's Youth Risk Behavior Surveillance System, conducted by CDC in collaboration with state departments of education. State-level surveys were conducted in 23 states and 10 cities in 1991; a national Youth Risk Behavior Survey was also conducted (19). These surveys are limited to high school students, most of whom are aged 14–17 years. The major advantages of Youth Risk Behavior Survey data are that they are available for many specific states and are released quickly. The major limitation is that very few demographic characteristics are available to examine subgroup differences in contraceptive use or to study the determinants of use or method choice.

Another source of national contraception data that illustrates some of the relative strengths of NSFG data is an annual survey, conducted by the Ortho Corporation and based on a self-administered questionnaire that respondents receive and return by mail (20). The overall response rate (74%) was somewhat lower than the NSFG response rate (79%). Even more serious is the fact that the response rate was much lower for youths aged 15–17 years (51%), unmarried women (60%), and women of races other than white (about 50%). Furthermore, the figures could not be adjusted by race and parity, something that can be and is done with NSFG

data (21). Comparisons of NSFG data on live births, for example, with data from the birth registration system suggest that the quality of NSFG data is generally very high.

EXAMPLES OF USING DATA

The Office of Population Affairs uses NSFG data for its Annual Report to the Congress on Family Planning Services and Population Research (22); for profiling people who use Title X family planning clinics; and for assessing the rates of sexual activity, contraceptive use, and pregnancy among teenaged youths. The contraception information and other data are used by the National Institute of Child Health and Human Development and the Office of Population Affairs for answering data requests on a wide variety of topics, including contraception, and for grant and contract research. NSFG data are also used for research and information purposes by other federal agencies, including CDC and the Administration for Children and Families.

The data were used for monitoring our progress in meeting the 1990 health objectives for the nation and are now being used to monitor our progress in meeting the year 2000 objectives outlined in *Healthy People 2000* (23). NSFG data are used for seven of the objectives on family planning (5.1 through 5.7), two on HIV risk reduction (18.3 and 18.4), and two on STD risk reduction (19.9 and 19.10). The NSFG also has data that could be used to track a number of the other objectives.

FUTURE ISSUES

The introduction of new contraceptive methods, including the female condom or pouch, Norplant® System, and Depo-Provera®, may affect trends in contraceptive use. Another potentially important factor is the continued danger of HIV infection, which may further increase condom use.

In 1994, the NSFG was to include a national sample of 10,500 females aged 15–44 years, including about 3,000 black women, 1,800 Hispanic women, and 5,700 white and other women. The interviews, scheduled for Septem-

ber 1994 to February 1995, are being done with laptop computers, which are expected to make the interviews easier to conduct and to produce higher quality data on contraceptive effectiveness and other topics. Data from the 1994 survey should be available in early 1996.

Better measures of multiple method use (such as use of the pill to prevent pregnancy and use of the condom to prevent STDs) and better measures of the consistency of contraceptive use will be obtained. Because the 1994 survey is to be followed by telephone follow-up interviews in 1996 and 1997, the range and usefulness of the data will increase to meet the changing needs of the 1990s.

ADDITIONAL RESOURCES

- Public use computer tapes of the NSFG data are produced and are available from the National Technical Information Service of the U.S. Department of Commerce, Springfield, VA 22161.
- A list of reports from the most recent NSFG and application forms for the public use data tapes are available from the Family Growth Survey Branch, National Center for Health Statistics, 6525 Belcrest Road, Room 840, Hyattsville, MD 20782.
- For further information about state-level surveys and workshops, contact the Behavioral Epidemiology and Demographic Research Branch, Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Mail Stop K-35, 4770 Buford Highway, NE, Atlanta, GA 30341-3724.

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