

Trends and Variations in Smoking During Pregnancy and Low Birth Weight: Evidence From the Birth Certificate, 1990–2000

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ABSTRACT. *Objective.* This study compares patterns of tobacco use during pregnancy over time and across population subgroups and examines the impact of maternal smoking on the incidence of low birth weight (LBW). The study also evaluates the use of birth certificates to monitor prenatal smoking.

Methods. The birth certificates of all states (except California) and the District of Columbia for 2000 provided to Centers for Disease Control and Prevention's National Center for Health Statistics were analyzed. Trends in maternal smoking were examined with data from birth certificates and other relevant sources.

Results. Smoking during pregnancy was reported for 12.2% of women who gave birth in 2000, down 37% from 1989 (19.5%), when this information was first collected on birth certificates. Throughout the 1990s, prenatal smoking rates were highest for older teenagers and women in their early 20s. Among population subgroups, the highest rates were reported for non-Hispanic white women who attended but did not complete high school. The incidence of LBW among singleton infants who were born to smokers was double that for nonsmokers. This relationship was observed in all age groups, for births to Hispanic and non-Hispanic white and black women, and within educational attainment subgroups. Even light smoking (<5 cigarettes daily) was associated with elevated rates of LBW.

Conclusion. Although prenatal smoking may be underreported on the birth certificate, the trends and variations in smoking based on birth certificate data have been confirmed with data from other sources. Birth certificate data can be useful in monitoring prenatal smoking patterns. Changes in the birth certificate questions that are to be implemented beginning in 2003 will help to clarify the levels and changes in smoking behavior during pregnancy so that smoking cessation programs can be more effectively designed to meet the needs of the populations at risk. *Pediatrics* 2003;111:1176–1180; *birth, maternal smoking, low birth weight, birth certificates.*

ABBREVIATIONS. LBW, low birth weight; API, Asian or Pacific Islander; CDC, Centers for Disease Control and Prevention; NSFG, National Survey of Family Growth.

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Cigarette smoking during pregnancy has been associated with increased risk of miscarriage, intrauterine growth retardation, preterm birth, and reduced infant birth weight. Low birth weight (LBW; weight <2500 g) is a major predictor of infant mortality and childhood morbidity and mortality^{1–6} and carries substantial costs.⁷ Intensive educational efforts by the federal government, public health officials, and others have contributed to the increased awareness of the negative consequences of maternal smoking.^{8,9} The mechanisms through which tobacco adversely affects pregnancy and birth weight have been described.^{8–10} Beginning in 1989, data on birth certificates, available from the National Vital Statistics System, included questions on smoking during pregnancy.^{11,12} This article describes and interprets trends and variations in tobacco use during pregnancy on the basis of information reported on birth certificates. We discuss our findings from birth certificate data in light of data from other sources to monitor smoking patterns among pregnant women. We also discuss how changes in the prenatal smoking questions on the birth certificate can be used to evaluate more effectively trends and variations in smoking during pregnancy. These findings can be useful in developing intervention strategies tailored for particular groups of women.

METHODS

We analyzed birth certificates for all infants who were born in 49 states and the District of Columbia, representing 87% of US births in 2000.^{11,12} Data on smoking for California births were not included in this analysis because their birth certificate questions differed from the standard format. The basic source for detailed information on smoking during pregnancy is the 2-part question first added to birth certificates in 1989 and now included on the birth certificates of all states except California.¹³ When the prenatal smoking question was first added to the birth certificate in 1989, 43 states and the District of Columbia reported this information; by 1994, the reporting area was composed of 46 states, New York City, and the District of Columbia.¹² The question asked whether the mother used tobacco during pregnancy and, if yes, the average number of cigarettes smoked per day. We examined first the correlates of maternal smoking, including maternal demographic and health characteristics, and then considered the consequences of smoking during pregnancy, focusing on the incidence of LBW for smoking and nonsmoking mothers. LBW infants include both infants who had intrauterine growth retardation and infants who were born preterm. The data presented here on LBW were based on singleton births only, to eliminate the effect of multiple births, which are at much higher risk of LBW regardless of other maternal characteristics. We also assessed trends and variations in prenatal smoking among population subgroups during the 1990s. In discussions of patterns by race and Hispanic origin, data for Hispanic women include all Hispanic women of any race; data presented by race are for non-Hispanic women.

RESULTS

Smoking during pregnancy declined steadily since 1989 according to birth certificate data. In 2000, 12.2% of women who gave birth reported tobacco use during pregnancy; compared with 19.5% in 1989, the rate in 2000 represents a 37% decline (Fig 1). Of the women who smoked in 2000, ~7 in 10 reported smoking less than half a pack of cigarettes daily, one fourth smoked between half a pack and a pack daily, and 3% smoked a pack or more.¹¹ During the 1990s, not only have prenatal smoking rates declined, but also the number of cigarettes women smoked during pregnancy has declined.

Correlates of Maternal Smoking

In 2000 as in earlier years, smoking rates differed considerably by maternal age with rates for women aged 25 and older significantly lower than rates for women in their teens and early 20s (Table 1 and Fig 1). Over the decade, rates generally dropped for women in all age groups with especially steep declines for women in the 25- to 39-year-old age group. During the mid-1990s, smoking rates during pregnancy rose for teenagers, but rates have since leveled off and declined modestly between 1999 and 2000. The rate for women in their early 20s changed little since the mid-1990s.

Prenatal smoking rates varied substantially among racial and Hispanic-origin populations (Table 1), ranging in 2000 from 2.6% of non-Hispanic Asian or Pacific Islander (API) women, 9.2% of non-Hispanic black women, 15.6% of non-Hispanic white women, and 20.5% of non-Hispanic American Indian women. Within non-Hispanic API and Hispanic subgroups, smoking rates varied greatly as well, for example, among non-Hispanic API women from 0.6% (Chinese) to 14.4% (Hawaiian) and among Hispanic women from 1.5% (Central and South American women) to 10.3% (Puerto Rican women; data not shown).¹¹ Not only did Hispanic and non-Hispanic API and black women have low rates of prenatal smoking, but also the consumption of cigarettes among smokers was considerably lower than among non-Hispanic white women. In 2000, just 14% to 15% of Hispanic, non-Hispanic API, and black women who smoked smoked half a pack of cigarettes or

more, compared with 31% of non-Hispanic white women.

Disparities in smoking rates were particularly large among teenage population subgroups. For example, among teenagers 18 to 19 years old, the rate of smoking during pregnancy ranged from 4.6% for Hispanics to 30.8% for non-Hispanic whites. A factor contributing to the much lower overall smoking rates for Hispanic and non-Hispanic API women was the dramatically lower prenatal tobacco use among women who were born outside the 50 states and the District of Columbia (2.2%) compared with women who were born in the 50 states and the District of Columbia (14.3%).

Smoking rates during pregnancy differed strikingly according to maternal education. Women who attended but did not complete high school had the highest smoking rates, 25.5% overall in 2000, and 28.2% of women aged 20 and older in this education category. In contrast, only 2.0% of college-educated women were reported as smokers. Among women with 9 to 11 years of schooling, the disparities were particularly large by race and Hispanic ethnicity: 47.5% of non-Hispanic white women, 23.8% of non-Hispanic black women, and 5.6% of Hispanic women aged 20 and older smoked during pregnancy (data not shown).

Unmarried mothers had much higher prenatal smoking rates than married mothers, and the disparity widened substantially with advancing maternal age. Women who started prenatal care in the first trimester of pregnancy had the lowest smoking rates overall, but among older teenagers, smoking rates differed little by trimester in which prenatal care was begun. One fourth or more of women who received no prenatal care at all smoked during pregnancy.

Consequences of Maternal Smoking

The negative association of maternal smoking and infant birth weight has been shown in numerous studies based on birth certificate data as well as other sources.^{1,3,14,15} In 2000, the incidence of LBW among singleton infants who were born to smokers was nearly double that for nonsmokers: 10.4% compared with 5.6%. The difference in LBW was observed for all age groups and for births to Hispanic and non-

Fig 1. Percentage of mothers who smoked during pregnancy by age: total reporting areas, 1990–2000. Note: California did not report smoking during pregnancy during 2000. California and South Dakota did not report smoking during pregnancy during 1999; California, Indiana, New York State, and South Dakota for 1990–1998; New York City for 1990–1993; and Oklahoma for 1990.

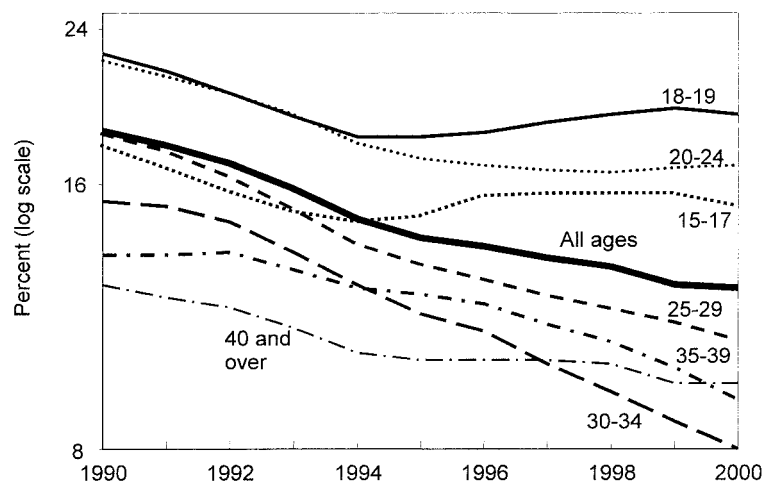


TABLE 1. Percentage of Mothers Who Reported Smoking During Pregnancy With Selected Demographic, Medical, or Health Characteristics by Age of Mother: Total of 49 Reporting States and the District of Columbia, 2000

| Maternal Characteristic | No. of Births* | Age of Mother | | | | | | | | |
|-----------------------------------|----------------|---------------|------|-------|-------|-------|-------|-------|-------|-------|
| | | Total | <15 | 15–17 | 18–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–54 |
| Race and ethnicity total† | 3 526 855 | 12.2 | 7.1 | 15.0 | 19.2 | 16.8 | 10.5 | 8.0 | 9.1 | 9.5 |
| Non-Hispanic | 2 929 403 | 13.8 | 8.6 | 18.8 | 23.0 | 19.9 | 11.8 | 8.6 | 9.7 | 10.2 |
| White | 2 191 416 | 15.6 | 20.6 | 28.8 | 30.8 | 24.3 | 13.1 | 8.9 | 9.8 | 10.1 |
| Black | 570 511 | 9.2 | 2.7 | 5.6 | 8.2 | 9.5 | 8.9 | 9.6 | 12.1 | 13.5 |
| American Indian‡ | 35 800 | 20.5 | 16.4 | 20.7 | 23.4 | 22.5 | 18.8 | 18.0 | 17.8 | 16.3 |
| Asian or Pacific Islander | 131 676 | 2.6 | § | 9.3 | 9.7 | 5.3 | 2.0 | 1.4 | 1.7 | 2.4 |
| Hispanic | 557 763 | 3.5 | 2.7 | 3.8 | 4.6 | 3.9 | 2.9 | 2.8 | 3.5 | 3.9 |
| Birth place of mother | | | | | | | | | | |
| Born in the 50 states and DC | 2 891 811 | 14.3 | 7.8 | 16.9 | 21.5 | 19.6 | 12.5 | 9.4 | 10.7 | 11.3 |
| Born outside the 50 states and DC | 623 957 | 2.2 | § | 1.8 | 2.9 | 2.4 | 1.9 | 1.9 | 2.4 | 2.8 |
| Educational attainment of mother | | | | | | | | | | |
| 0–8 y | 171 195 | 9.8 | 7.4 | 17.3 | 18.2 | 10.9 | 6.7 | 5.3 | 5.9 | 5.0 |
| 9–11 y | 538 888 | 25.5 | 5.8 | 15.1 | 26.1 | 29.2 | 26.4 | 26.5 | 30.3 | 27.5 |
| 12 y | 1 122 184 | 16.4 | § | 12.3 | 15.2 | 17.5 | 16.0 | 15.4 | 17.1 | 17.9 |
| 13–15 y | 767 654 | 9.1 | § | 9.5 | 8.5 | 9.3 | 8.8 | 8.7 | 10.2 | 10.8 |
| 16 or more y | 873 758 | 2.0 | § | § | § | 2.9 | 1.8 | 1.7 | 2.3 | 2.8 |
| Live birth order | | | | | | | | | | |
| 1st | 1 416 737 | 10.4 | 7.2 | 14.9 | 18.2 | 13.2 | 5.8 | 5.0 | 6.9 | 7.5 |
| 2nd | 1 143 589 | 11.7 | § | 16.6 | 21.8 | 18.0 | 10.1 | 6.6 | 7.4 | 7.7 |
| 3rd | 584 909 | 14.2 | § | 15.2 | 22.7 | 22.5 | 14.9 | 9.6 | 9.3 | 10.3 |
| 4th+ | 364 445 | 17.4 | § | § | 22.9 | 24.6 | 20.4 | 15.3 | 13.6 | 12.1 |
| Marital status | | | | | | | | | | |
| Married | 2 353 862 | 8.0 | § | 14.6 | 16.4 | 12.8 | 7.4 | 5.6 | 6.3 | 6.4 |
| Unmarried | 1 172 993 | 20.6 | 7.1 | 15.1 | 20.1 | 20.9 | 20.9 | 23.3 | 25.9 | 25.1 |
| Trimester prenatal care began | | | | | | | | | | |
| First | 2 842 073 | 11.1 | 8.9 | 16.3 | 19.7 | 16.2 | 9.5 | 7.0 | 7.8 | 8.0 |
| Second | 447 972 | 16.8 | 5.7 | 13.4 | 18.1 | 18.9 | 15.9 | 15.0 | 16.6 | 16.4 |
| Third | 95 152 | 17.4 | 5.8 | 11.7 | 18.0 | 19.3 | 16.9 | 16.0 | 19.9 | 17.8 |
| No care | 41 403 | 24.5 | § | 12.2 | 20.3 | 22.8 | 25.6 | 30.4 | 35.2 | 34.6 |

Excludes data for California.

* Totals include births with smoking status not reported.

† Includes births with origin not stated.

‡ Includes births to Aleuts and Eskimos.

§ Figure does not meet standards of reliability or precision; based on fewer than 20 births in the numerator.

Hispanic white and black women. Women who smoked during pregnancy compose 21% of all LBW births compared with 12% of births of 2500+ g.

Generally, the LBW gap by smoking status widened with advancing maternal age, for all groups. Among LBW subgroups, prenatal smoking status seemed to have a greater impact on variations in moderately LBW (1500–2499 g) than very LBW (<1500 g; Table 2). Overall moderately LBW rates were 8.8% for births to smokers and 4.5% for births to nonsmokers; comparable very LBW rates were 1.6% and 1.1%, respectively.

The risk of LBW was also elevated for births to less educated women who smoked, even after controlling for maternal age. LBW rates for births to smokers were consistently higher than for births to nonsmokers, regardless of maternal age, race/Hispanic ethnicity, or education (tabular data not shown).

Among smokers, LBW rates rose steadily with increasing consumption of cigarettes. In 2000, 15.1% of births to women who smoked at least 1.5 packs of cigarettes were LBW, compared with 9.7% of births to women who smoked fewer than 5 cigarettes daily and 5.6% for births to nonsmokers.

DISCUSSION

Smoking during pregnancy has declined in the United States during the last decade or so, in large part in response to the intensive public education

and public health campaigns that have been waged.^{9,16} Smoking rates fell steadily for women in the 25- to 39-year-old age group, whereas trends for other age groups have been less consistent. Rates declined for women in all race and ethnicity and educational attainment groups. Those most likely to smoke include older teenagers and young adult non-Hispanic white women with less than a high school education. Prenatal smoking rates are also high for non-Hispanic American Indian women, and their rates are high in all age groups, unlike the pattern for non-Hispanic white women, whose rates generally decline with advancing maternal age.

Data from the Centers for Disease Control and Prevention (CDC)/National Center for Health Statistics' 1995 National Survey of Family Growth (NSFG) help to describe other characteristics of women who smoke during pregnancy and generally corroborate findings from birth certificate data, including the negative impact of maternal smoking on infant birth weight. Among women who had a singleton live birth in the period 1991–1995, smoking at all during pregnancy was more commonly reported among non-Hispanic white women, women with lower levels of education, those whose pregnancies were unwanted at the time of conception, and those whose deliveries were paid at least in part by Medicaid or governmental assistance.¹⁷ Among women with intended births, poorer women were more likely to

TABLE 2. Percentage of VLBW and MLBW, Singleton Births, by Reported Prenatal Smoking Status and Age and Education and Race and Hispanic Origin of Mother and the Ratio of Smokers to Nonsmokers: Total of 49 Reporting States and the District of Columbia, 2000

| | Total* | | Non-Hispanic White | | Non-Hispanic Black | | Hispanic | | | | | |
|-------------------------|--------|-----------|--------------------|-----------|--------------------|-----------|----------|-----------|-----|------|-----|-----|
| | Smoker | Nonsmoker | Smoker | Nonsmoker | Smoker | Nonsmoker | Smoker | Nonsmoker | | | | |
| Age of mother | | | | | | | | | | | | |
| VLBW† | | | | | | | | | | | | |
| Total | 1.6 | 1.1 | 1.5 | 1.3 | 0.7 | 1.9 | 3.7 | 2.5 | 1.5 | 1.9 | 0.9 | 2.1 |
| <15 y | # | 3.0 | NA | # | 1.9 | NA | # | 3.8 | NA | # | 2.3 | NA |
| 15–19 y | 1.7 | 1.6 | 1.1 | 1.5 | 1.2 | 1.3 | 3.1 | 2.5 | 1.2 | 2.1 | 1.1 | 1.9 |
| 15–17 y | 1.9 | 1.8 | 1.1 | 1.7 | 1.5 | 1.1 | 3.5 | 2.7 | 1.3 | 2.1 | 1.3 | 1.6 |
| 18–19 y | 1.6 | 1.4 | 1.1 | 1.4 | 1.0 | 1.4 | 3.0 | 2.4 | 1.3 | 2.0 | 1.0 | 2.0 |
| 20–29 y | 1.4 | 1.0 | 1.4 | 1.1 | 0.7 | 1.6 | 3.0 | 2.3 | 1.3 | 1.5 | 0.8 | 1.9 |
| 30–39 y | 2.0 | 1.0 | 2.0 | 1.4 | 0.6 | 2.3 | 5.3 | 2.9 | 1.8 | 2.5 | 1.1 | 2.3 |
| 40+ y | 2.7 | 1.5 | 1.8 | 1.8 | 1.0 | 1.8 | 6.0 | 3.8 | 1.6 | # | 1.7 | NA |
| MLBW‡ | | | | | | | | | | | | |
| Total | 8.8 | 4.5 | 2.0 | 7.9 | 3.4 | 2.3 | 14.9 | 8.1 | 1.8 | 9.4 | 4.5 | 2.1 |
| <15 y | 10.2 | 10.4 | 1.0 | 10.4 | 9.4 | 1.1 | # | 11.9 | NA | # | 8.7 | NA |
| 15–19 y | 8.8 | 6.9 | 1.3 | 8.3 | 5.2 | 1.6 | 12.8 | 9.6 | 1.3 | 8.7 | 6.1 | 1.4 |
| 15–17 y | 9.3 | 7.5 | 1.2 | 8.9 | 5.5 | 1.6 | 11.8 | 10.4 | 1.1 | 9.8 | 6.6 | 1.5 |
| 18–19 y | 8.6 | 6.5 | 1.3 | 8.0 | 5.0 | 1.6 | 13.2 | 9.6 | 1.4 | 8.2 | 5.7 | 1.4 |
| 20–29 y | 8.0 | 4.4 | 1.8 | 7.2 | 3.4 | 2.1 | 13.1 | 7.5 | 1.7 | 9.1 | 4.2 | 2.2 |
| 30–39 y | 10.5 | 3.8 | 2.8 | 9.1 | 3.0 | 3.0 | 18.9 | 7.6 | 2.5 | 10.6 | 4.2 | 2.5 |
| 40+ y | 16.0 | 5.5 | 2.9 | 13.2 | 4.5 | 2.9 | 26.8 | 10.2 | 2.6 | 15.5 | 6.3 | 2.5 |
| Educational attainment§ | | | | | | | | | | | | |
| VLBW† | | | | | | | | | | | | |
| Total | 1.6 | 1.0 | 1.6 | 1.2 | 0.7 | 1.7 | 3.8 | 2.5 | 1.5 | 1.8 | 0.9 | 2.0 |
| 0–8 y | 1.8 | 0.8 | 2.3 | 1.5 | 0.7 | 2.1 | 4.0 | 1.9 | 2.1 | 1.8 | 0.8 | 2.3 |
| 9–11 y | 1.8 | 1.3 | 1.4 | 1.3 | 1.0 | 1.3 | 3.6 | 2.4 | 1.5 | 1.8 | 0.9 | 2.0 |
| 12 y | 1.5 | 1.2 | 1.3 | 1.2 | 0.8 | 1.5 | 3.7 | 2.6 | 1.4 | 1.8 | 0.9 | 2.0 |
| 13–15 y | 1.4 | 1.0 | 1.4 | 1.1 | 0.7 | 1.6 | 3.8 | 2.5 | 1.5 | 1.6 | 0.9 | 1.8 |
| 16+ y | 1.1 | 0.7 | 1.6 | 0.9 | 0.5 | 1.8 | 4.6 | 2.4 | 1.9 | # | 0.8 | NA |
| MLBW‡ | | | | | | | | | | | | |
| Total | 8.8 | 4.2 | 2.1 | 7.8 | 3.3 | 2.4 | 15.3 | 7.6 | 2.0 | 9.6 | 4.2 | 2.3 |
| 0–8 y | 10.9 | 4.2 | 2.6 | 10.8 | 3.6 | 3.0 | 16.2 | 7.4 | 2.2 | 9.4 | 4.1 | 2.3 |
| 9–11 y | 10.4 | 5.6 | 1.9 | 9.0 | 4.8 | 1.9 | 16.0 | 9.1 | 1.8 | 11.3 | 4.3 | 2.6 |
| 12 y | 8.5 | 4.7 | 1.8 | 7.6 | 3.7 | 2.1 | 14.9 | 7.9 | 1.9 | 8.9 | 4.4 | 2.0 |
| 13–15 y | 7.7 | 4.1 | 1.9 | 7.0 | 3.2 | 2.2 | 14.5 | 7.2 | 2.0 | 7.8 | 4.2 | 1.9 |
| 16+ y | 6.5 | 3.3 | 2.0 | 6.1 | 2.8 | 2.2 | 12.5 | 6.3 | 2.0 | 5.9 | 3.8 | 1.6 |

Excludes data for California. VLBW indicates very low birth weight; MLBW, moderately low birth weight; NA, not applicable.

* Includes race and Hispanic origin groups other than non-Hispanic white, non-Hispanic black, and Hispanic, and origin unknown.

† Birth weight of <1500 g.

‡ Birth weight of 1500–2499 g.

§ Based on births to women 20 years of age or more.

|| Includes education not stated.

Figure does not meet standards of reliability or precision; based on fewer than 20 births in the numerator.

have smoked than women who had private insurance to pay for delivery (27% compared with 11%).

Birth certificate data on maternal smoking status and birth weight show that there is no “safe” level of prenatal smoking. Even among singleton infants who were born to the lightest smokers (ie, 1–5 cigarettes per day), the percentage of LBW was 9.7%, substantially higher than for nonsmokers, 5.6%. Nonetheless, women who quit smoking before or during pregnancy reduce the risk for adverse pregnancy outcomes. These include infertility, preterm premature rupture of the membranes, preterm delivery, and LBW.¹⁸

One factor that potentially affects the trends and variations in prenatal smoking based on birth certificate data is the change in the number of reporting states during the 1990s. Although there were some changes during the late 1990s that were attributable solely to the changing reporting area, the overall trends and patterns were not affected.¹²

During the years for which birth certificate data on maternal smoking have been available, these data have been compared with smoking data collected

from other sources, including the CDC’s Pregnancy Risk Assessment Monitoring System, the CDC’s Behavioral Risk Factor Surveillance System, the CDC’s NSFG, and the National Pregnancy and Health Survey.^{11,12,17,19–24} These surveys suggest that prenatal smoking may be underreported on the birth certificate; however, they also confirm the trends and variations in smoking based on birth certificate data. A major reason for the underreporting seems to be the lack of specificity in the birth certificate questions with respect to timing of smoking during pregnancy. Additional important factors include variations in the source of the information for each birth and the considerable stigma associated with tobacco use, which may be exacerbated in cases of poor birth outcome.^{11,12,21,25–27} The current question on the birth certificate does not indicate how to respond for a woman who smoked before pregnancy, who smoked until she learned that she was pregnant, or who reduced her cigarette consumption during pregnancy. Such information is available from the retrospective pregnancy history questions in the NSFG and Pregnancy Risk Assessment Monitoring System.

Reliable tracking of maternal smoking patterns would be greatly enhanced if the birth certificate questions provided this detail. In addition, more detailed data can help in assessing the success of prenatal smoking prevention efforts.

A comprehensive study of alternative smoking questions was undertaken in the early 1990s in California, and the results of this research have formed the basis for a redesigned set of questions on maternal smoking for the birth certificate.^{25,27,28} Some states have begun implementing the 2003 revision of the US Standard Certificate of Live Birth, which includes these questions; it is anticipated that implementation of the revised certificate will be phased in among all states during the next several years. The new questions ask about smoking behavior during the 3 months before pregnancy and for each trimester of pregnancy. These questions will clarify the time frame for smoking activity and the consumption levels for smokers. Women who quit smoking early in pregnancy are more likely to report their smoking behavior because they will “get credit” for their change in behavior. Asking about smoking status before pregnancy will also help to clarify the potential number of higher risk pregnancies. The revised birth certificate will also provide information on principal source of payment for the delivery, which will facilitate more analysis of the relationship between payment source and smoking behavior identified in the NSFG data.

Smoking during pregnancy clearly elevates the risk of LBW. The new questions planned for the US Standard Certificate of Live Birth should provide valuable information on trends and variations in maternal smoking so that smoking prevention and cessation programs can be carefully and effectively designed to meet the needs of the populations at risk.

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