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Family Planning Issues Relating to Maternal and Infant Mortality in the United States¹

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Both maternal and infant death rates in the United States are much higher than in many developed countries. The interrelationships between abortions and maternal and infant mortality have been analyzed on the basis of data from the 1970s and 1980s. The legalization of abortions in 1973 resulted in a marked increase in legal abortions and marked reductions in maternal and infant mortality over the course of the 1970s.

However, a wide variation in abortion rates and in the number of abortion facilities indicates that such facilities were not readily available to all segments of the population in some areas. This probably accounts in part for higher maternal and infant death rates in such areas.

Smoking, small weight gain, use of alcohol and drugs in pregnancy, and excessive maternal youth or age affected the outcome of pregnancy and contributed to high rates of infant death. Infant death rates were especially high among newborns of teenagers and young adult mothers; relatively high proportions of these newborns had low birthweights; a large share of the pregnancies involved were unintended; and slightly over half of the unintended pregnancies in teenagers and young women resulted in abortion.

Comparisons with findings in Sweden reveal that the rates of unplanned pregnancy, abortion, and infant mortality were all much higher in the United States than in Sweden. The differences are attributed to better contraceptive services, which were made available free or very inexpensively in Sweden. Also, the frequency of low weight births was much lower in Sweden.

This article provides a brief summary of the situation in the United States with regard to maternal mortality, abortion, and infant mortality. It then considers preventive actions available for reducing maternal and infant mortality and examines the prospects for reducing the frequency of abortions through family planning.

Clearly, information about pregnancy outcome and the risk factors involved needs to be widely known in order to effectively plan measures promoting the health of mothers and infants. Currently,

a number of such factors are becoming recognized as a result of data collection and analyses carried out by the U.S. National Center for Health Statistics (NCHS) and Centers for Disease Control (CDC). Also, data on the frequency of abortions and unintentional and unwanted pregnancies, as well as on risk factors involved with these events, are being collected and analyzed by the Alan Guttmacher Institute (AGI). In addition, the Worldwatch Institute has assembled data on abortions (1) and the reproductive health of women in developing and developed countries (2) and has recommended methods for preventing maternal and infant deaths.

Maternal and infant death rates are much higher in the United States than in many developed countries, which indicates that more effective health programs

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are undertaken in other countries. Therefore, the problems keeping these U.S. death rates high must become widely known, especially among politicians and others responsible for legislation directed at improving the nation's health. Currently, the spread of AIDS to mothers and their infants is adding to this urgency. Preventive actions need to be taken for the purpose of reducing maternal and infant mortality and improving the health of present and future mothers and their infants.

MATERNAL MORTALITY

World Health Organization (WHO) estimates indicate half a million women die each year as a result of pregnancy and childbirth (3). In the developed countries, maternal death rates generally range from 4 to 9 per 100 000 live births. In the developing countries, however, the rates are typically much higher, in some countries as much as 50 times higher (4).

In 1983 the maternal death rate for the United States was 8.0 deaths per 100 000 live births (5). By comparison, according to the WHO document *Maternal Mortality Rates (second ed.)* (3), a number of European countries had maternal death rates for 1983 or a specified earlier year that were considerably below this value. Specifically, Denmark, Norway, and Sweden had rates of 4 maternal deaths per 100 000 live births, while Finland, the Netherlands, and Switzerland had rates of 5 maternal deaths per 100 000 live births. Presumably, conditions and programs in these countries resulted in the lower death rates.

Data on numbers of deaths from different causes in the United States are published annually by the National Center for Health Statistics (5). With respect to maternal death, the definition used is that published in the *International Classification of Diseases (ninth revision)* (7), which is as follows: "A maternal death is de-

defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration of the pregnancy and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes." These causes are assigned the codes 630 through 676 in the ninth revision.

Table 1 and Figure 1 show U.S. maternal mortality (deaths per 100 000 live births) for the years 1970 through 1988. As can be seen, maternal mortality fell dramatically in the 1970s—from 21.5 in 1970 to 9.2 in 1980, a 57% reduction. During this period, in 1973, a U.S. Supreme Court decision (*Roe v. Wade*) legalized abortion. By permitting legal abortions where facilities were available, this ruling saved many women's lives. It should be noted, however, that facilities were not readily available for women in all sections of the country.

In the 1980s the decline in maternal mortality slowed, the rate dropping from 9.2 deaths per 100 000 live births in 1980 to 8.4 in 1988, a 9% reduction.

As this suggests, around the world the nature, levels, and causes of high maternal mortality require investigation. One undertaking involved with such work, the Inter-American Investigation of Mortality (8), examined the causes of all deaths among adults 15–74 years of age in 12 cities by combining 1962–1964 data from selected death certificates, hospital and physicians' records, and visits to families of the deceased. Of the 586 deaths classified by the Investigation as being maternal deaths, 176 (30%) were not shown on death certificates as being due to maternal causes but were added as a result of these investigations. Conversely, 24 (4%) of the fatalities shown on death certificates as maternal deaths were excluded because they were not considered maternal deaths by the medical referees.

Table 1. Maternal and infant death rates and abortion ratios in the United States, 1970–1989.

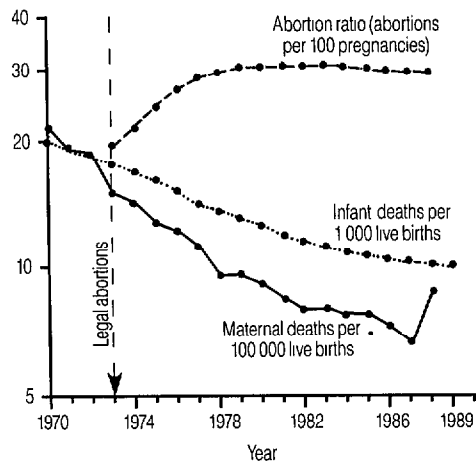
Year	Maternal deaths per 100 000 live births ^a	Infant deaths per 1 000 live births ^a	Abortion ratio (abortions per 100 live births & abortions) ^b
1970	21.5	20.0	
1971	18.8	19.1	
1972	18.8	18.5	
1973	15.2	17.7	19.3
1974	14.6	16.7	22.0
1975	12.8	16.1	24.9
1976	12.3	15.2	26.5
1977	11.2	14.1	28.6
1978	9.6	13.8	29.2
1979	9.6	13.1	29.6
1980	9.2	12.6	30.0
1981	8.5	11.9	30.1
1982	7.9	11.5	30.0
1983	8.0	11.2	(30.4) ^c
1984	7.8	10.8	29.7
1985	7.8	10.6	29.7
1986	7.2	10.4	(29.4) ^c
1987	6.6	10.1	28.9
1988	8.4	10.0	28.8
1989		9.8	

^aNational Center for Health Statistics (5, 24).

^bAlan Guttmacher Institute (6).

^cEstimated.

Figure 1. U.S. maternal and infant death rates and abortion ratios, 1970–1989.



Review of these 586 maternal deaths revealed that 199 (34%) were due to abortions. Table 2 and Figure 2 show the Inter-American Investigation's findings in each

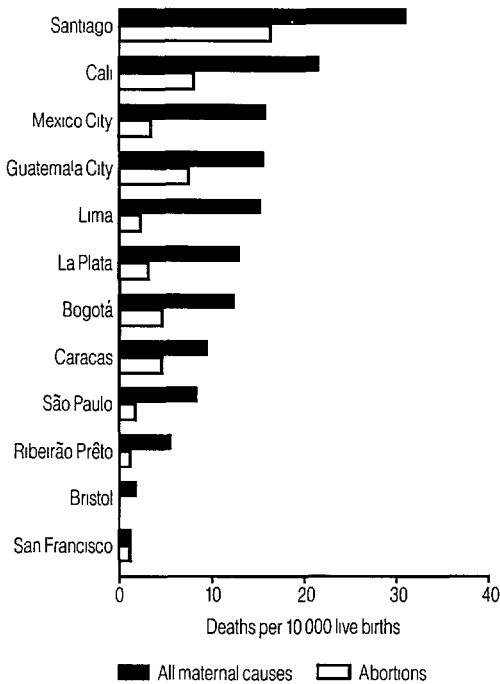
Table 2. Maternal deaths from complications of pregnancy, childbirth, and the puerperium and from abortion per 10 000 live births in 10 cities of Latin America, Bristol (England), and San Francisco (USA), 1962–1964.

City	Maternal deaths per 10 000 live births, from:	
	All maternal causes (640–689) ^a	Abortion (650–652) ^a
Bogotá	12.6	4.6
Bristol	1.8	—
Cali	21.8	8.0
Caracas	9.7	4.5
Guatemala City	15.9	7.5
La Plata	13.3	3.1
Lima	15.6	2.1
Mexico City	17.1	3.4
Ribeirão Preto	5.7	1.1
San Francisco	1.1	1.1
Santiago	31.6	16.6
São Paulo	8.7	1.7

^aSee World Health Organization, *International Classification of Diseases (ninth revision)* (7).

Source: Puffer RR, Griffith GW (8), pp 169–182.

Figure 2. Maternal deaths from complications of pregnancy, childbirth, and the puerperium and from abortion per 10 000 live births in 12 cities, 1962–1964.



study regarding maternal mortality from all causes and from abortion.

The high maternal death rates in several cities (both from all causes and from abortion) as revealed by the Investigation shocked many health officials. Indeed, except for two cities in the English-speaking countries (Bristol in England and San Francisco in the United States) the rates generally were very high.

In Santiago, Chile, the death rate from abortions alone was a very high 16.6 maternal deaths per 10 000 live births or 166 per 100 000 live births. Fortunately, actions had been taken in that city to reduce maternal mortality and especially mortality from abortions through a family planning program (9). As reported by Sai (9), over the next 15 years (during which abortions remained illegal), the

percentage using contraception increased from 3% to 23%, and hospital admissions due to abortion complications declined.

Viel (who was instrumental in developing the family planning program in Chile) and Campos have described the Chilean family planning experience in a work entitled "La Experiencia Chilena de Mortalidad Infantil y Materna, 1940–1985" published by the Alan Guttmacher Institute (10). They reported that great progress had been made in the provision of contraceptive services in Chile.

The Inter-American Investigation of Mortality (8) recommended querying the causes of all deaths of women of child-bearing age from certain specific causes as a practical way of improving mortality statistics. This would probably cause a substantial increase in the numbers of deaths assigned to maternal causes, especially abortion.

The problems involved in obtaining knowledge about all deaths due to maternal causes from death certificates became known and were investigated. The states of Georgia (11) and Washington (12) and the city of New York (13) in the United States, as well as countries such as Jamaica (14), conducted investigations and reported findings. These findings revealed that the actual maternal death rates were much higher than the rates obtained from death certificates. RoCHAT (15) reported on the incompleteness of U.S. maternal death records (especially those relating to abortion-related deaths). The work showed efforts needed to be directed toward improvement of the completeness and accuracy of maternal death rates.

Jacobson, in *Worldwatch* Paper 102 (2), asserted: "For every woman that dies [from maternal causes] many others are left with illnesses or impairments that rob them of their health and productivity for the rest of their lives... [and they] go unreported." This document considers the

challenges involved in improving the reproductive health of women. One important challenge is providing women with sufficient food. Another is preventing the sexually transmitted diseases that now include AIDS. Others are providing adequate prenatal care and reducing the complications of pregnancy and delivery.

Two important conferences have emphasized the value of improving reproductive health and reducing maternal mortality. These conferences, cosponsored by several international agencies, were held in Nairobi, Kenya, in 1987. The first (International Safe Motherhood Conference: Preventing the Tragedy of Maternal Deaths—4) was held in March 1987; and the second (Better Health for Women through Family Planning—16) was held in October 1987. In addition, the World Health Organization published a document entitled *Preventing Maternal Deaths* (17) in 1989. The fine reports of these conferences and of WHO provide considerable information for developing preventive programs throughout the world.

UNWANTED PREGNANCY AND ABORTION

High proportions of the maternal deaths in developed as well as developing countries are caused by unintentional or unwanted pregnancies, many of which result in abortions. Of the 500 000 maternal deaths occurring in the world each year, between 100 000 and 200 000 are due to illegal and poorly performed abortions (17). If facilities for legal abortions are available and are used, the maternal death rate tends to be relatively low. Through family planning programs, including educational programs, and provision of facilities for all women with unwanted pregnancies (even low-income women), the frequency of abortions and maternal deaths could be reduced.

As Jacobson (1) has stated, "Abortions are carried out in every country, no matter the law. History has shown that women determined to exercise control over the number of children they bear will do so, even if it means having dangerous illegal abortions. Worldwide, perhaps 50 million abortions are performed each year, nearly half of them illegal."

The Alan Guttmacher Institute conducts annual surveys in the United States to obtain the number of legal abortions from the providers (hospitals, clinics, and physicians' offices) and reports the current findings in their publication *Family Planning Perspectives*. The numbers of abortions performed and abortion facilities existing in the period 1973–1988 are reported in the issue of May–June 1990 (6).

The data in Table 1 and Figure 1 show the rapid increase in the legal abortion ratio (expressed as the number of abortions per 100 live births plus abortions) following the legalization of abortions in 1973. Simultaneously, as legal abortions increased, the maternal death rate fell. Obviously, the decrease in illegal abortions and the provision and use of facilities for legal abortions accounted for the major part of this decline in maternal mortality. Other factors such as improvement of treatment could account for some of the decline. However, as pointed out by Jacobson (1): "It is the number of maternal deaths, not abortions, that is most affected by legal codes. Criminalizing abortion makes one of the safest of all surgical procedures highly dangerous by driving it underground into the hands of unskilled and often unscrupulous practitioners."

The abortion ratios and rates vary widely in different parts of the United States. The number of legal abortions performed in 1988 and the abortion rates per 1 000 women 15–44 years of age by state are provided in the aforementioned

report of the Alan Guttmacher Institute (6). These figures show that certain states and the federal district had much higher rates than the national rate of 27.3 per 1 000 women 15–44, while in other states the rates were very low:

High rates		Low rates	
District of Columbia	163.3	Mississippi	8.4
California	45.9	Idaho	8.2
New York	43.3	West Virginia	7.5
		South Dakota	5.7
		Wyoming	5.1

Some of the very low rates were probably due to lack of facilities. In Mississippi, for example, only 3 out of 82 counties had large-scale providers. Women desiring abortions may travel to other states or have illegal abortions. Besides the very low legal abortion rate, this lack of facilities probably accounts for some of the high maternal and infant death rates.

Another source of data on abortions is the U.S. Centers for Disease Control, which obtains data from reporting states, the District of Columbia, and New York City, and publishes summaries in *Morbidity and Mortality Weekly Report*. A 1990

MMWR summary (18) covering the 1986–1987 period indicated that the total number of abortions performed in the United States in 1987 was 1 353 671, a figure 13% lower than the 1 559 110 total for 1987 reported by AGI (6).

Although the information sources of these reports differ, the CDC data, which show the distribution of abortions by maternal age, are useful for understanding certain problems. As Table 3 shows, teenagers accounted for 25.8% of the reported legal abortions in the United States in 1987, and young women 20–24 years of age had 33.4%. Also, while those under 15 years of age accounted for relatively few abortions, the abortion ratio per 1 000 live births in this group was an extremely high 1 275, for the number of abortions exceeded the number of live births. This ratio (the number of abortions per 1 000 live births) declined as age increased, reaching a low of 196 among women 30–34 years of age before rising to 555 among women 40 years of age and over, another age group with a relatively small number of abortions. The concentration of abortions among teenagers and young adults is shown clearly by the curve in Figure 3.

Table 3. Reported numbers of legal abortions, percentages of abortions, and abortion ratios per 1 000 live births, by maternal age, in selected states,^a United States, 1987.

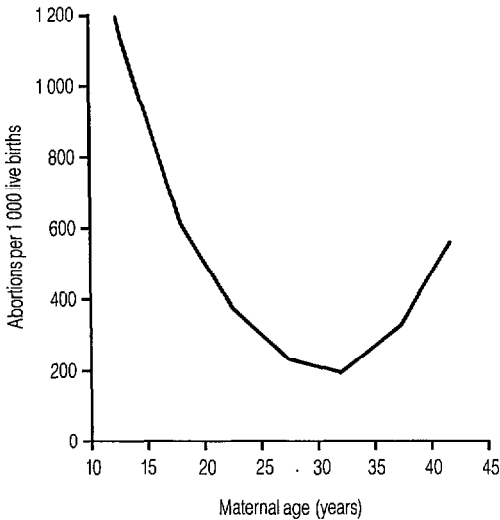
Maternal age (years)	Legal abortions		Abortion ratio
	No.	% in age group	
Total ^b	862 194	100.0	326
<15	8 668	1.0	1 275
15–19	214 075	24.8	668
20–24	288 034	33.4	386
25–29	184 766	21.4	218
30–34	103 426	12.0	196
35–39	50 100	5.8	297
≥40	13 125	1.5	555

^aIncluding all states for which data were available (18), the District of Columbia, and New York City.

^bExcluding unknown.

Source: Koonin LM, et al. (18).

Figure 3. Legal abortions per 1 000 live births in the United States (selected states, the District of Columbia, and New York City, 1987).



In our studies of birthweights (19), data for Sweden served to show wide differences between the birthweight pattern prevailing there as compared to patterns found in the United States and several other countries. Likewise, in this analysis of abortion patterns it appears that comparative data for Sweden provide some useful insights. In a *Family Planning Perspectives* article entitled "Induced Abortion, a World Review," Henshaw (20) has presented abortion rates per 1 000 women by maternal age group for women 15–44 years of age in several countries including Sweden (1987) and the United States (1985). The rates, shown in Table 4 and Figure 4, were much higher in the United States than in Sweden for young women (those under 20 years of age and 20–24 years of age). However, the reverse was true for women 35 years of age and over, whose age groups had lower rates in the United States than in Sweden.

Another important consideration relating to pregnancy outcomes is the intent

Table 4. Abortions per 1 000 women, by maternal age, in Sweden (1987) and the United States (1985).

Maternal age (years)	United States 1985	Sweden 1987
Total	28.0	19.8
<20	45.7	21.5
20–24	52.3	31.2
25–29	30.9	24.6
30–34	17.8	19.0
35–39	9.7	15.6
≥40	2.9	8.2

Source: Henshaw SK (20).

of the mother. Using data from the National Survey of Family Growth, Forrest and Singh (21) have shown the outcome of pregnancies according to the mother's intent by maternal age group (Table 5). These estimates indicate that only 42.8% of the pregnancies involved were intended. The remaining 57.2% were un-

Figure 4. Abortions per 1 000 women, by maternal age, in Sweden (1987) and the United States (1985).

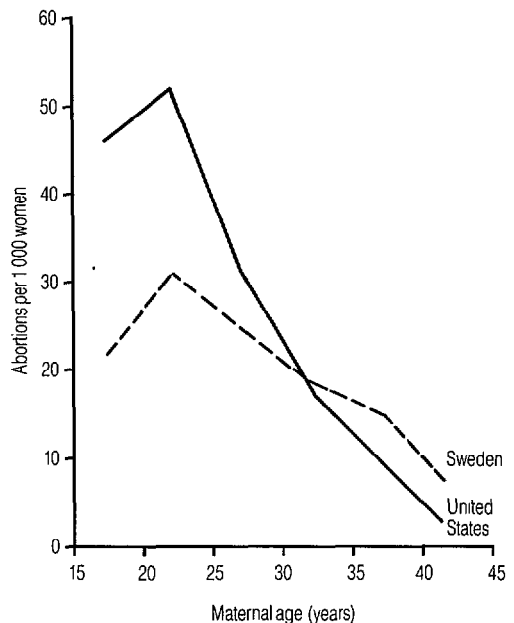


Table 5. Percentage distribution of intended and unintended pregnancies and outcomes, by maternal age at conception, United States, 1987.

Maternal age (years)	Intended pregnancies	Unintended pregnancies		
	Births	Births	Abortions	Total
Total	42.8	28.4	28.9	57.2
<20	18.3	40.0	41.7	81.7
20–24	39.4	29.7	30.9	60.6
25–29	54.8	23.8	21.4	45.2
30–34	57.8	21.0	21.1	42.2
35–39	44.1	25.1	30.8	55.9
≥40	23.1	31.3	45.6	76.9

Source: Forrest JD, Singh S (21), p 206.

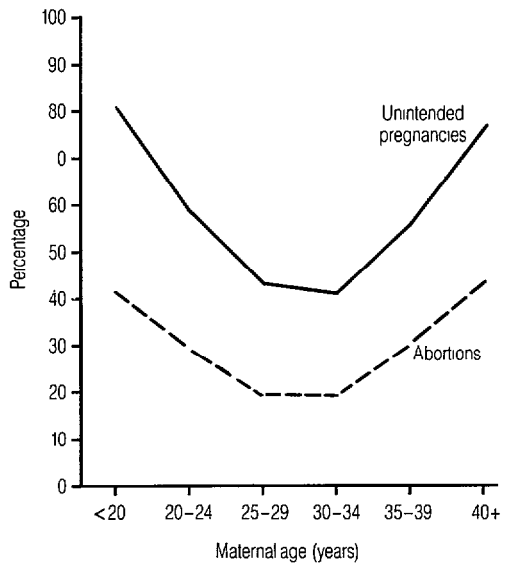
intended, approximately half of these leading to abortions and half to live births. For women under 20 years of age the situation was quite different, with only 18.3% of the pregnancies being intended and 41.7% resulting in abortions. Over half the women with unintended pregnancies were below the poverty level.

In only two age groups (25–29 and 30–34 years) were over half of the pregnancies scheduled in order to yield intended live births. Most of those pregnant who were teenagers, below age 25, or over age 34 did not intend to have live births. The percentages for each group are shown in Figure 5. Forrest and Singh (21) conclude: “Until the problem of unintended pregnancy is addressed more effectively by policymakers, program providers, and individuals, there appears little likelihood that the abortion issue, which has become a troubling and divisive political concern in the United States, can be resolved.”

Jones and coworkers (22) have analyzed experiences with unintended pregnancy, family planning services, and contraceptive practice in developed countries. Again, comparing the experience of Sweden with that of the United States, their assessment indicates that the planned pregnancy rate was slightly higher in Sweden (1982) than in the United

States (1983), while the unplanned pregnancy rate (including abortions) in Sweden was much lower. In Sweden, as in other countries, their study “...suggested that better contraceptive practice ...might be accounted for partly by the fact that contraceptive services in those countries were widely available, confidential, and free or very inexpensive and

Figure 5. Percentages of pregnancies among women 15–44 in the United States that were unintended and that ended in legal abortions in 1987.



the fact that realistic and timely information about sexuality and contraception was provided through the schools or the media.... There appears to be a lack of readily available information about contraceptive methods and services in the United States, especially simple, objective messages in the mass media."

INFANT MORTALITY

As Table 1 and Figure 1 show, U.S. infant mortality underwent a rapid decline in the 1970s—from 20.0 deaths per 1 000 live births in 1970 to 12.6 in 1980, a 37% drop. After 1980 the decline was slower—from 12.6 deaths per 1 000 live births in 1980 to 9.8 in 1989, a 22% reduction. The rapid decline in the 1970s occurred in the same period as the rapid increase in legal abortions.

Like maternal mortality, infant mortality is higher in the United States than it is in many other countries. Using data for 1987, the National Center for Health Statistics (23) ranked the infant death rates of 38 selected countries. The 10 countries with the lowest rates were as shown:

Country	Infant death rate	Country	Infant death rate
Japan	5.0	Singapore	7.3
Sweden	5.7	Hong Kong	7.5
Finland	6.2	Netherlands	7.6
Switzerland	6.9	France	7.8
Canada	7.3	Ireland	7.9

The infant death rate in the United States in 1987 was 10.1 deaths per 1 000 live births, over twice the lowest rate of 5.0 in Japan. In all, 23 of the 38 countries ranked had lower rates than the United States.

Of the many factors influencing the infant death rate, several are considered here. Data on the distribution of live births

by maternal age, and also on the ages of mothers of deceased infants at the time the infant died, were obtained for several projects of the Inter-American Investigation of Mortality in Childhood (24). These data showed that babies born to young mothers (under 20 years of age) and to older mothers (35 years and over) experienced the highest infant mortality.

With a view to extending preventive programs capable of reducing infant mortality, the U.S. Centers for Disease Control and the National Office for Vital Statistics have been carrying out studies of infant deaths matched with birth records. Data on several risk factors have been evaluated and are being widely used. The results of a study matching death records for single-delivery infants born in the United States in 1980 with U.S. birth certificates (25) have indicated that infant mortality was very high for babies of mothers below age 15 and mothers in the 15–19 year age range, and was lowest for babies of mothers 25–34 years of age (Table 6 and Figure 6).

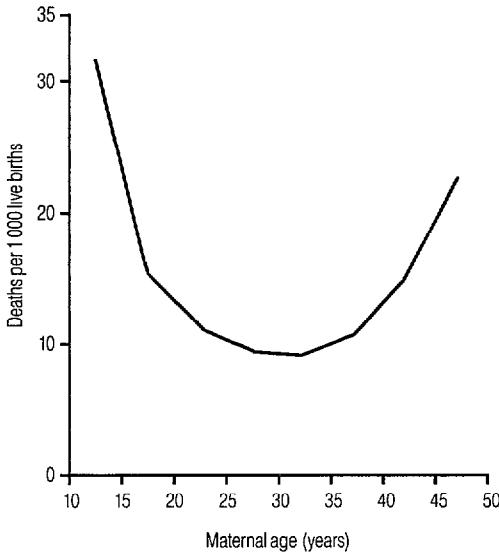
Another important determinant of the size of the infant death rate is birthweight (23, 26). The annual rates of low birthweight infants (those with birthweights below 2 500 g or 5.5 pounds) per 1 000 live births in the United States from 1975

Table 6. Infant deaths per 1 000 live births of single-delivery infants born in the United States in 1980, by maternal age.

Maternal age (years)	Deaths per 1 000 live births
Total	11.0
10–14	31.5
15–19	15.8
20–24	11.1
25–29	9.2
30–34	9.0
35–39	10.8
40–44	15.1
45–49	22.6

Source: Hogue CJK, et al. (25)

Figure 6. Infant deaths per 1 000 live births among single-delivery U.S. infants born in 1980, by maternal age.



through 1988 were as follows: 1975, 73.9; 1980, 68.4; 1985, 67.5; 1986, 68.1; 1987, 69.0; and 1988, 69.3.

In 1986, 6.8% of the live births were of low birthweight. As Taffel (26) points out, "Between 1975 and 1985, the rate of low birthweight declined in the United States, from 73.9 to 67.5 LBW [low birthweight] babies per 1 000 live births. Most of the decline (86%) occurred between 1975 and 1980." This is the same period when the infant death rate declined rapidly and the rate of legal abortions increased.

The percentage of live births of low birthweight was obtained in 22 countries of the world (19). As with infant mortality, some of the same countries had lower percentages of low birthweight infants than the United States. For example, in 1973 only 3.6% of the singleton live births in Sweden weighed less than 2 500 g, and half of the live births that year had birthweights of 3 000 g or more.

As Table 7 and Figure 7 show with U.S. data for 1985, the rate of low weight births

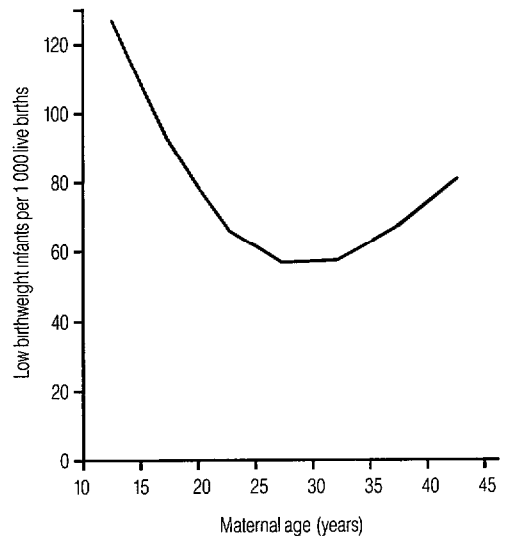
Table 7. Rate of low birthweight births per 1 000 live births in the United States in 1985, by maternal age.

Maternal age (years)	Rate of low birthweight births
Total	67.5
<15	128.5
15–19	92.7
20–24	69.0
25–29	59.2
30–34	60.5
35–39	69.0
≥40	83.7

Source: Taffel S (26).

varies with maternal age. For instance, 12.85% of the live births of very young mothers (those under 15 years of age) were of low weight, as were 9.27% of those delivered by mothers 15–19 years of age. These, of course, are the same maternal age groups with high infant death rates, and the same ones with high incidences of unintended pregnancy and abortion.

Figure 7. Low birthweight births per 1 000 live births by maternal age, United States, 1985.



Information collected in the course of a valuable study using matching data from the 1980 National Natality Survey and infant death certificates has been analyzed by Keppel and Taffel (27). This matching study was a large one pertaining to over 3 million births. Several variables were analyzed—including birthweight, weight gain during pregnancy, educational attainment of the mother, and smoking.

Weight gain during pregnancy was found to be an important determinant of birthweight. As Table 8 shows, a relatively large share (13.9%) of the mothers gaining less than 16 pounds during pregnancy delivered low birthweight babies, but this percentage fell to 4.0% among mothers gaining 36 pounds or more.

Taffel also analyzed combinations of factors, including maternal age and weight gain during pregnancy (28). The results showed that nearly a fifth (19.2%) of the mothers under 20 years of age who gained less than 16 pounds during pregnancy had low birthweight babies, but only 4.9% of the mothers in this age group who gained over 35 pounds during pregnancy gave birth to such babies. Also, 9.3% of the mothers completing less than 12 years of school had low birthweight babies, while of those completing 15 years or more of school, only 5.0% gave birth to such babies.

Table 8. Percentages of U.S. infants delivered with low birthweights, by maternal weight gain during pregnancy, as indicated by the 1980 National Natality Survey.

Maternal weight gain in pregnancy (pounds)	% infants with low birthweight
Total	6.7
<16	13.9
16–20	11.4
21–25	6.1
26–35	5.0
≥36	4.0

Source: Taffel S (28).

Prenatal care influenced the outcome of pregnancy. According to Taffel (26), "Women at high risk of delivering a LBW baby—those who are young, unmarried, or with little education—are more likely to delay prenatal care." Of those with no prenatal care, 7.8% had low birthweight babies, while of those with prenatal care beginning in the first or second month of pregnancy, only 2.5% had low birthweight babies. (For this selected group, 3.0% were of low birthweight.)

Smoking in pregnancy has been known for many years to affect the outcome of pregnancy. In their study, Keppel and Taffel (27) reported that about a quarter of the married women who gave birth in 1980 smoked during pregnancy. The infant death rate was higher for babies of smokers than for babies of nonsmokers (14.1 deaths per 1 000 live births compared to 10.1). A special report by Lincoln (30) from the 1985 International Conference on Smoking and Reproductive Health provides data regarding the effect of smoking upon the likelihood of low birthweight deliveries and other aspects of reproduction.

The use of alcohol and drugs during pregnancy needs to be analyzed in relation to pregnancy outcome. The February 1992 issue of the *National Geographic* dealt with "Alcohol, The Legal Drug" (31). The section on "The Preventable Tragedy, Fetal Alcohol Syndrome" by George Steinmetz (32) provided photographic evidence of the damage done to children when their mothers drank during pregnancy. It was reported that each year thousands of women who drink during pregnancy deliver babies with irreversible alcohol-related defects. As Steinmetz explained, "Alcohol in the mother's bloodstream can be toxic to the developing fetus depending on the stage of pregnancy and how much she drinks. Damage can range from subtle to severe, causing clumsiness, behavioral prob-

lems, stunted growth, disfigurement, mental retardation." This illustration of the damage done by alcohol in a popular magazine may have had a greater impact on the public than any number of learned presentations in medical journals. Another recent article, "Alcohol and Other Drug Use among High School Students—United States, 1990," based on a National School-Based Youth Risk Behavior Survey (33), revealed that some 55.0% of female students were currently drinking alcohol, 11.1% were smoking marijuana, and 1.0% were using cocaine. As some of these teenagers become pregnant, the outcome of such pregnancies should be studied.

The United States Standard Certificate of Birth was revised for use beginning in 1989. The new certificate provides for the collection of information about risk factors such as weight gain in pregnancy, smoking, and drug use. Hopefully, information on AIDS will be included if data are available. According to Israel, "The anticipated linked birth and infant death files containing information for this cohort will be adjusted to include the additional data collected."³ Hence, in a few years analyses will be released which will make this new information available for efforts directed at evaluating and improving health programs for prevention of infant mortality.

In summary, the U.S. infant death rate is especially high among babies born to teenagers and young adults. This is partly due to the high frequency of low birth-weight babies born to these young mothers. Mothers in these age groups also had high percentages of unwanted pregnancies, over half of which ended in abortions. Thus, this high rate of legal abortion in young adults probably prevented

many live births that would have resulted in low weight births thence leading to infant death. In areas where facilities for legal abortions are limited, such births resulting from unwanted pregnancies would not be prevented, and the infant death rate would be relatively high. Thus the size of the infant death rate is affected by the abortion rate as well as by the prevention of unwanted pregnancies in teenagers and young adults. Abortion can only be prevented by family planning (including effective contraception) available to all. Such family planning—which has a strong potential for preventing unwanted pregnancies in teenagers and young adults, reducing infant mortality, and limiting abortions—demands increased consideration and support from politicians, health agencies, and the educated public at large.

FAMILY PLANNING

To enlarge on the last point, solutions to the problems pointed out in the three previous sections of this article all depend in large part on the success of family planning. As already noted, in 1987 over half of the pregnancies in the United States (57.2%) were unintended, and over half of these unintended pregnancies resulted in abortions. Although contraceptive methods have been widely used in the United States during and since the period of rapid decline in maternal and infant mortality, they are not available to all segments of the population.

The contraceptive practices of American women have been described in an article by Mosher (34) utilizing data from the National Survey of Family Growth. As of 1988, 60.3% of all U.S. women 15–44 years of age were reported to be using some method of contraception. However, this figure fell to 32.1% for the group of women in especially great need, young women 15–19 years of age (Table 9). The

³Israel RA, National Center for Health Statistics, Hyattsville, Maryland, USA (personal communication).

percentage increased in older groups to 70.2% of the women 35–39 years of age. (Mosher also stresses that the need for contraception and family planning was especially great among poor women—34.) Trussell, in discussing unwanted pregnancies of teenagers (35), has noted that "... Reducing childbearing should be our first priority.... The two most common reasons given by adolescents for not using contraceptives are believing that the risk of pregnancy is small, and failing to anticipate intercourse."

As indicated in Table 10, the two most common methods of contraception among women 15–44 in 1988 were sterilization and the pill. At that time the condom was only being used by partners of 14.6% of these women.

The age group difference noted above and the relatively low percentages of women, especially younger women, using contraception have multiple causes, including lack of funding of services for poor women and lack of educational programs.

In Sweden, the country used for comparison, 78% of the married women 15–44 years of age in 1981–1985 were using contraception, while the comparable figure for the United States was 68% (see Table 3 in *The State of the World's Children, 1988—36*).

Table 9. Percentages of women 15–44 years old using contraceptives in the United States in 1988, by age group.

Age group (in years)	% using contraceptives
Total	60.3
15–19	32.1
20–24	59.0
25–29	64.5
30–34	68.0
35–39	70.2
40–44	66.0

Source: Mosher WD (34)

Table 10. Percentage distribution of contraceptive users 15–44 years of age in the United States in 1988, by contraceptive method.

Method	%
Total	100.0
Sterilization	39.2
Pill	30.7
Condom	14.6
Other	15.5

Source: Mosher WD (34)

Several articles in *Family Planning Perspectives* have taken up the problem of contraception in the United States. Rosoff (37), in an article on teenage pregnancy, reported: "In most of the countries studied but not in the United States, contraceptives are available to everyone for free or at very low cost." According to Jones and coworkers (22), "The way in which family planning services are provided seems to have a substantial impact on the pattern of contraceptive practice. The service delivery system in the United States is different from those of other Western countries in a number of fundamental respects that make it less conducive, on the whole, to the promotion of the modern, highly effective methods of contraception. In addition, there appears to be a lack of readily available information about contraceptive methods and services in the United States, especially simple, objective messages in the mass media."

The United States faces the challenge of preventing or reducing unwanted pregnancies and abortions by making contraceptives available to all through health services. Also, educational programs need to be extended or introduced so that all members of our society, especially teenagers and young adults, will take advantage of such health services. These preventive and educational programs will help to reduce maternal and

infant mortality, improve the health of women in the present generation, and contribute to the health of women and children of the future.

Viel (10) has discussed the relation between abortions and family planning in Chile, where family planning contributed to the decline of induced abortions requiring hospitalization and also to the decline of maternal and infant mortality. The proportion of women 15–44 years of age who used effective contraceptives as the result of government programs that began in 1964 increased steadily to 24.0% in 1985. These programs were only for the poorest sectors of the population and excluded those who obtained contraceptives from the pharmacies. Infant mortality in Chile declined from 95.4 deaths per 1 000 live births in 1965 to 19.7 in 1985, and maternal mortality dropped from 27.9 maternal deaths per 10 000 live births in 1965 to 4.4 in 1985.

Regarding the cost of effective family planning, Worldwatch Paper 102 by Jacobson (2) reports that "Per capita investment of about \$1.50 per year should enable most countries to put into action elements of a 'safe motherhood' program—including expanded prenatal and delivery care, added health posts, and strengthened family planning services—according to Anne Tinker of the World Bank. These efforts could reduce maternal mortality by 65% and infant mortality by 80%, at a cost of about 0.5% of GNP."

The extension of contraceptive programs in the United States, especially their extension to teenagers and young adults, is essential for reducing unwanted births, abortions, low birthweight births, and infant mortality. The relation and importance of legal abortion to maternal and infant mortality has been clarified.

Many of the issues regarding reduction of maternal and infant mortality that have been covered in this article were included in the World Declaration on the Survival,

Protection, and Development of Children and Plan of Action of the United Nations World Summit for Children in September 1990 (38). The Plan of Action for improving the health of all women and children emphasized the need for education of women, reduction of illiteracy, provision of food and nutrition, improvement of environmental and social conditions, and prevention of childhood diseases, as well as family planning.

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