

Induced Abortion: Risks That May Impact Adolescents, Young Adults, and Their Children

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ABSTRACT: Induced abortion is the most common surgical procedure performed on females of child-bearing age, including adolescent women. Consequently, pediatricians should be familiar with the short-term and long-term risks of induced abortion and also be able to compassionately discuss these risks with adolescents and involved family members. Some of the potential short- and long-term risks include increased mortality from suicide and other violence, as well as natural causes; increased risk of breast cancer; greater rates of substance abuse; and higher risk of morbidity and mortality for subsequent children due to premature births, especially very premature births. Patient education on the risks of induced abortion should be considered during anticipatory guidance discussions at well-child visits during the adolescent years.

Introduction

The annual number of induced abortions in the United States was 1,058,000 in 2011¹ (and an unknown number worldwide); of these approximately 186,200 were on early/middle (teenaged) adolescents. Including those performed on older adolescents/young women of college age (20-24), approximately 540,000 induced abortions² occur annually on US adolescent/young adults prior to full brain maturation. The prefrontal cortex of the brain, the area used in complex decision-making, is not fully mature until about age 25.³ From 1967-2011, nearly 54 million abortions have been reported in the US (all ages).⁴

Aside from any ethical considerations, the magnitude of these numbers makes it important to consider associated risks and sequelae from a public health perspective.

I. Inherent Difficulties in Studying Induced Abortion

A. Researcher bias

The highly charged issue of induced abortion has, unfortunately, often been characterized by polarized research: Many of the individuals who perform and support widespread legal access to induced abortion tend to downplay the associated risks while those who find abortion-on-demand ethically problematic tend to publish findings that emphasize the risks. In addition, much of the research addressing induced abortion has been conducted by affiliates of organizations that profit financially from performing abortions, such as Planned Parenthood,⁵ creating a significant conflict of interest. Bias not only impacts study design, but also how results are reported. In addition, many studies, which reveal both positive and negative results, are poorly designed.

One salient example of pro-abortion bias is a study that concluded that vacuum aspiration abortion does not lower birth weight in subsequent children. Indeed, the *average* birth weight of the next child was essentially the same. However, the authors omitted mentioning that the percentage of babies weighing between 1001 and 2000 grams inclusively was two to three times higher in women whose previous pregnancy had been aborted compared with those who had not aborted their previous pregnancy.⁶ Another example is the study by Melbye et al that minimized the evidence supporting the hypothesis that second trimester abortions do increase the risk of breast cancer.⁷

No person or organization of persons is immune from bias. Consequently, in an effort to achieve the greatest level of objectivity, an attempt to review, report and synthesize the findings from researchers on both sides of the ethical debate is presented here.

B. Poor availability of accurate records

The lack of accurate records is another challenge in studying induced abortion. For example, many deaths after both childbirth and abortion are not coded as such, underestimating the mortality of each.⁸⁻¹⁰ Death certificates may list the complication (e.g., infection or suicide) rather than the underlying cause.

Deaths from suicide that occurred as a result of abortion-related depression, for example, would not be coded as an abortion-related death. No Federal laws mandate States to report abortion data to the Centers for Disease Control and Prevention (CDC) and Federal regulations do not require abortion facilities to report such data to State Health Departments. In most but not all States, however, the abortion facilities report statistics to local health departments, which, in turn, report to the State Health Departments, which report to the CDC. These abortion providers collect only limited data regarding immediate complications that occur while women physically remain in their facilities. They do not track or report any potential longer-term complications. Moreover, when a complication does occur later, it typically results in a visit to either a primary care physician or an emergency department, and the woman may fail to disclose the preceding abortion to the physician. Also, financial and billing records are of little use in tracking caseload because many, if not most, induced abortions are paid for in cash.

A number of studies have sought to overcome these obstacles by linking death records with medical records that contain abortion histories (California Medicaid, Finland, and Denmark).¹¹⁻¹⁴ Unfortunately, some studies have erroneously assumed that no abortions occurred during periods prior to the establishment of a national abortion registry (for example, 60,000 women in Denmark who had abortions before 1973 were misclassified in a 1997 study on abortion and breast cancer). A Finnish paper examining the effect of data linkages on identifying pregnancy-associated deaths (deaths within one year of pregnancy) found that, without such linkages, 73% of all pregnancy-associated deaths and 94% of induced abortion-related deaths would have been missed. In only 6% of deaths in the year after induced abortion was the abortion reported on death certificates (the report was in the narrative portion of the death certificate); in only a third of these death certificates mentioning the abortion (2% of all deaths in the year following abortion) was abortion listed as the cause of death.⁸ Similar omissions have been found in US records.¹⁵

C. Selection of appropriate control groups

In evaluating the comparative risks of abortion, researchers have used different control groups: at some times nulligravidas (women who have never been pregnant) and at other times women with an equal number of pregnancies to those who had had an abortion. Which is appropriate? Comparison to nulligravidas is invalid – a woman's body is forever affected by the hormonal changes of pregnancy. Therefore, in comparing the risks of induced abortion with the risks of giving birth, the two groups should have the same reproductive histories prior to the pregnancy in question, with the variable group undergoing induced abortion while the control group gives birth. From the perspective of the pregnant woman making a decision for or against abortion, these are the comparison groups that will give her *valid* information – ones with her past history that then compare the results of a subsequent pregnancy.

D. Bias and errors in study designs

Due to multiple challenges in studying induced abortion, it is difficult to design high-quality, well-controlled, prospective studies. Retrospective studies have been criticized as being crippled by recall bias: These studies theorize that women who are sick (for example, with breast cancer) are more likely to admit to past abortions than controls, thus falsely elevating abortion correlates. However, studies designed to evaluate recall bias have found none.¹⁶⁻¹⁸

On the other hand, some prospective studies failing to link abortion to the development of breast cancer have been criticized for other methodological flaws. For example, non-abortion control groups were overrepresented by older women – at higher risk for breast cancer by virtue of age alone. In fact, many of these women were miscategorized as having had no abortions when they may have had one or more. Other studies utilized variable cohorts with an overrepresentation of younger women, who may not have had enough time since their abortions to develop cancer, and compared them to control groups with older women who did not have abortions.¹⁹ Some meta-analyses included unpublished studies that failed to find elevated breast cancer risk and simultaneously omitted inclusion of published peer-reviewed studies that support the opposite conclusion.²⁰

E. Assessment of safety

Statistics purporting to show abortion is safer than childbirth²¹ are flawed for at least four reasons.

1. With regard to both pregnancy and abortion, death certificates, as discussed previously, are often inaccurate. In fact, researchers in Finland, a country with the highest quality of statistical reporting due to its longstanding national healthcare registry, concluded that only 1 in 4 overall pregnancy-associated deaths and only 1 in 16 abortion-associated deaths were able to be identified solely from death records.¹¹

2. Even official statistics that investigate "late maternal deaths" (those occurring from 42 days after the end of pregnancy until a year after the end of pregnancy), miss deaths, whether after abortion or after childbirth, that occur years later from both medical (for example, breast cancer or cardiomyopathy) or psychological (for example, suicide) causes. Studies that do investigate long-term mortality rates after induced abortion versus childbirth are discussed in detail later in the paper.

3. When evaluating the comparative safety of abortion versus childbirth, researchers fail to account for the protective health effects of giving birth. For example, carrying a pregnancy to term is associated with lower rates of risk for suicide, serious injury, breast cancer, and certain other diseases.^{11,22,13,23} Consistent with this protective effect, women who have given birth also have lower mortality rates in their age cohort than women who were never pregnant.^{17,24,25,26,27}

4. Finally, the broader picture assesses the effect of abortion versus childbirth on a woman's future children: are they put at risk by her choice?

II. Risks of Abortion to a Woman's Subsequent Health

Maternal mortality rates in countries with permissive versus restrictive abortion laws

Proponents of legal abortion claim that legalized abortion results in lowered maternal mortality rates. However, Ireland, Poland, and Malta – nations with the most restrictive abortion laws – have some of the lowest maternal mortality in the world. Note comparisons (Table 1) to neighboring countries with similar socioeconomic standing.

Table 1. Maternal Mortality Rates^a of Selected Countries per 100,000 Live Births

R or P ²⁸	Country	Annual births (1990-2010)	1988-1992	1993-1997	1998-2002	2003-2007	2008-2012	Comments
R	Malta	6,000-4,000	12	11	11	“9”	“9”	Adj 1.5; <i>Actually only 1 death reported in last 10 years (2002-11), giving an unadjusted maternal mortality rate of under 2.4; adjusted by 1.5 would raise it to only 3.6</i>
R	Poland	554,000-409,000	17	14	8	5	3	Adj 1.5
P	Germany	841,000-698,000	13	8	7	7	7	Adj 1.5
P	Hungary	125,000-98,000	23	23	10	13	14	Adj 1.5
R	Ireland	51,000-71,000	6	4	6	2	“9” (5 at 1.5 adj)	Adj 1.5 until 2005 then WHO increased it to current Adj 3; <i>Actual deaths 0-3/yr (avg 2); 16 deaths between 2002-2010 (last year reported) gives an unadjusted rate of 3.</i>
P	United Kingdom	773,000 average	10	11	11	12	12* 8*	Adj 1.45-1.7-1.6 (varied) *12 was the number given by WHO in 2012; 8 was given in 2013 but actual deaths were a high of 73 in 2009 and low of 40 in 2010; (avg 52 over last 5 years and over 2002-2010; 2010 is last year reported); this gives unadjusted rate of 7 and adjusted rate (1.5) of 10.
P	United States	4,025,000-4,238,000	12	11	13	17	28	Adj 1.4 to 2002 then 1.0,1.1,1.1, 1.2, 1.3, 1.4, 1.5

^a Rates shown are adjusted 5-year average rates per 100,000 live births per year. R = Restrictive laws on abortion; P = Permissive laws on abortion. Adj = adjustment factor used by the World Health Organization (WHO) to increase reported death rates to compensate for presumed underreporting; accuracy of this is doubtful. (Note that the UK has 11 times the actual births of Ireland and more than 25 times the actual maternal deaths.) From 1988 to 2001, Malta had 8 maternal deaths over 14 years. From 2002 through 2011 (the last year for which data is available), Malta had only 1 maternal death (in 2008). During these 10 years, Malta had 42,100 births (calculated from birth rates and population estimates), giving an actually 10-year maternal mortality rate of 2.4²⁹ Table adapted from WHO data.³⁰

It is also interesting to note the history of maternal mortality in some countries that have prohibited abortion after years of legalization. For example, Chile outlawed abortion in 1989. At that time, the maternal mortality rate was 41.7/100,000 live births. If the lack of “safe legal abortion” contributed to maternal mortality, then one would expect to observe a rise in Chile’s maternal mortality rate with the end of legal abortion. Instead, maternal mortality continued to drop, reaching a nadir of 12.3/100,000 live births in 2003. Actual maternal deaths dropped from 123 nationwide in 1989 to 33 in 2003, averaging in the 40s in the past decade. Researchers in Chile insist the government has an excellent system for documenting maternal deaths and attest to the accuracy of the published national statistics.³¹ WHO, in contrast, inflates its estimates of maternal mortality attempting to adjust for presumed under-reporting.

Methods of induced abortion and acknowledged immediate risks

In 2011, Planned Parenthood reported that 23% of abortions were accomplished through the use of the progesterone antagonist, mifepristone.³² This was more than a 100% increase from the 10.6% that the CDC reported for “medical” (nonsurgical) abortions in 2006, when the CDC also reported 87% by “curettage,” which includes suction curettage (used up to 12 weeks) and sharp curettage for dilation and curettage (D&C) procedures.³³

Complications associated with mifepristone include potentially fatal sepsis and vaginal hemorrhage requiring transfusion.³⁴ Due to frequent incomplete abortions when given alone, mifepristone is usually combined with misoprostol. Misoprostol in failed abortions has been associated with teratogenicity (skull, facial, and limb defects), thought due to its effect in restricting uterine blood flow during organogenesis.³⁵

Although mifepristone is approved for use only through 7 weeks, it is used off-label after two months of pregnancy. It is important to note that when mifepristone is taken beyond 49 days of pregnancy, attempted abortions have been reversed in cases of the mother changing her mind prior to taking misoprostol to cause uterine contractions. This reversal is achieved with off-label use of progesterone injections.³⁶

There are other inherent risks to surgical abortions such as uterine perforation, cervical lacerations, and hemorrhage, in addition to inherent risks of anesthesia. Other immediate risks include infection (lessened by antibiotic coverage), retained intrauterine tissue, cervical incompetence, bowel perforation and peritonitis, and pelvic pain.³⁷⁻³⁸

Those performing both medical and surgical abortions are warned of the risk of missing an ectopic pregnancy,³⁵ which can prove fatal to the mother. Overall complications reported by abortion providers are rare, possibly due to poor follow-up and a lack of reporting requirements.

Mental health risks

It has been stated that “In repeated studies since the early 1980s, leading experts have concluded that abortion does not pose a hazard to women’s mental health.”³⁹ For example, a 2011 Danish study⁴⁰ studied first inpatient psychiatric admissions and outpatient psychiatric visits comparing women in the 9 months prior to their first abortion with women during their first pregnancy ending in childbirth (starting 9 months prior to birth), and following these women for 12 months following the abortion or birth. They found that rates per 1000 person-years were steady among those having abortions (14.6 before and 15.2 after the abortion), while rates rose from 3.9 during pregnancy to 6.7 after childbirth (peaking in the first 2 months postpartum and returning to baseline by 9 months). The rate among girls and women who did not have a first abortion or delivery during the study period was 8.2. The researchers concluded that there was not an increased risk of mental health disorders after a first-trimester abortion. However, there are potential confounding factors which undermine this conclusion. For example, they failed to study the childbirth cohort during the months prior to pregnancy or whether rates for those aborting were constant during the initial 9-month period. It is possible rates rose only at the end of the period as a decision was made. Nor was severity of the mental health issue evaluated, since only first psychiatric visits were counted. In addition, the study did not address whether abortion or childbirth worsened pre-existing mental health problems.

Many reasonably designed studies do show an association between induced abortion and mental health problems,⁴¹ including depression, anxiety,⁴² suicide, and alcohol and other substance abuse.⁴³ One meta-analysis of 22 studies published between 1995-2009 (total of 877,181 women) showed an 81% increase in mental health problems associated with abortion, especially suicide and substance abuse.⁴⁴ While the author has been criticized unfairly at times in her research methodology,⁴⁵ many legitimate problems do remain. Perhaps the most significant flaw is that the author specifically attempts to make conclusions about mental health risk *after* abortion, yet many of the studies utilized in her analysis fail to differentiate mental health problems before versus after abortion.

Similarly, a subsequent study of 936 women from California, based solely on patient recall of mental health problems, pregnancies, and their timing, found that controlling for preexisting mental health problems lowered the association of most mental health risks to insignificant levels. However, a positive trend was noted that might

have proven statistically significant in a larger, better-powered study. The increase in substance use after induced abortion remained statistically significant.⁴⁶

While these studies indicate a correlation between abortion and various mental health problems, the nature of the correlation requires better delineation. The study designs preclude any conclusions of causation, but this does not mean that, *a priori*, a causative association cannot exist.

Higher suicide rates are a well-known association of induced abortion. Studies in California and Finland showed a 2.5 to 7 times higher suicide rate in the years after abortion than after childbirth. Women who gave birth had half the suicide rate of those who had not been pregnant. Pregnancy resulting in birth is associated with a lower suicide risk while pregnancy resulting in abortion is associated with an increased risk.^{11,47} A 1985 study by researchers at the University of Minnesota of 3636 rural high school students found that a girl was 10 times more likely to commit suicide if she had undergone an abortion within the preceding 6 months than if she had not. Girls with a lifetime history of abortion were about 6 times more likely to have attempted suicide compared with those who had no history.⁴⁸

Studies on suicide rates between 1987-2003 in States that passed parental notification and consent laws regarding abortion show an 11% to 21% drop in the suicides of those affected by the laws (15- to 17-year-old girls), but not in those unaffected (15- to 17-year-old boys and girls 18 and over.)⁴⁹ While such descriptive studies cannot prove causality, they strongly suggest a high correlation between abortion and suicidal behavior.

More high-quality studies analyzing the comparative rates of psychiatric problems both prior to pregnancy and in the years following childbirth versus abortion are needed. In addition, fathers of the aborted children, including those who physically or otherwise compel mothers to abort their children, and any other individuals involved in the abortion decision can theoretically be affected as well and are thus worthy of study. Fathers opposed to abortion or who, independently of this, want to provide care for the baby may feel helplessly left out of the decision-making process. Other than anecdotal collections, no empirical studies have been undertaken to scientifically evaluate the impact of abortion on men. Research has also not been conducted regarding the impact of a woman's previous abortion on her relationship with her future husband. Designing a study to capture these outcomes of interest would be very difficult.

Even though studies of higher quality are needed to fully understand the impact of abortion on mental and emotional health, there seems to be sufficient evidence to suggest a potentially adverse association. Pediatricians need to consider the possibility of an increased risk for a variety of mental health problems, including substance abuse and suicide, in such adolescent patients. They also need to consider the complex and multidimensional nature that parental abortion histories may theoretically have on future family relationships and dynamics. This will be discussed later under Section IV.

Risk of breast cancer

(Please note that this subject is addressed in much greater detail in another American College of Pediatricians Position Statement. The reader is encouraged to refer to "Abortion and the Risk of Breast Cancer: Information for the Adolescent Woman and Her Parents.")⁵⁰

The Guttmacher Institute, originally affiliated with America's largest abortion provider, asserts that "Exhaustive reviews by panels convened by the US and British governments have concluded that there is no association between abortion and breast cancer. There is also no indication that abortion is a risk factor for other cancers."⁵¹ On the other hand, the Breast Cancer Prevention Institute, an organization with the firm conviction that induced abortion is a causative factor in the genesis of some breast cancers, states that

In the past 30 years, landmark advances in developmental and molecular breast biology coupled with multiple epidemiologic studies from around the world have shown induced abortion to be an independent risk factor for breast cancer. Induced abortion before 32 weeks' gestation will impede the natural maturation process in the breast such that there is a significantly greater probability that breast cancer will develop later. Those most at risk of developing breast cancer after an abortion include

teenagers (almost half of all first induced abortions between 2006 and 2010 were reportedly to teenagers) and women over 30, especially if they have a family history of breast cancer.⁵²

An extensive review of the physiology of breast cancer and analysis of the shortcomings of published studies, both those with positive and those with negative associations, was published in 2014.⁵³

The proposed pathophysiologic mechanism between induced abortion and breast cancer begins with changes spurred by pregnancy. Pregnancy initiates the multiplication of immature cancer-*susceptible* cells in the breast, which are then transformed into mature cancer-*resistant* cells during late pregnancy and lactation. Induced abortion and very premature delivery interrupts this process after the onset of multiplication but before transformation, resulting in a larger pool of cancer-*susceptible* cells.⁵³

The National Institutes of Health, while denying the association of breast cancer with induced abortion, does report that:

Women who have their first full-term pregnancy at an early age have a decreased risk of developing [hormone receptor-positive] breast cancer later in life. For example, in women who have a first full-term pregnancy before age 20, the risk of developing breast cancer is about half that of women whose first full-term pregnancy occurs after the age of 30.⁵⁴

This in essence states that a pregnant teenager who has a full-term pregnancy and gives birth has a lower risk of breast cancer than one who does not have a full-term pregnancy (or give birth). The risk of breast cancer diagnosed prior to menopause is increased by 5% (3% for postmenopausal cancers) for every year that a first full-term pregnancy is delayed.⁵⁵ Once a teenager is pregnant, the option of delaying pregnancy is lost and she can either give birth or delay her first birth by having an induced abortion. The controversy is whether an induced abortion will increase the risk for breast cancer more than just delaying the first pregnancy until an older age. Risks of breast cancer are further modified by a full-term pregnancy either preceding or following an induced abortion, complicating the interpretation of studies. A spontaneous abortion, with its lower estrogen levels,⁵⁶ does not appear to affect breast cancer risk.⁵³

Studies from developed nations report the risk of breast cancer associated with induced abortion anywhere from 0% to more than a 40% increase.⁵⁷ Breast cancer is very common in developed nations, thus a small increase in risk affects a large number of people. Recent studies from developing nations show a far higher increased risk of breast cancer following abortion than do most studies from Western nations. A study from India involving 94 cases and 94 controls showed a 6-fold increase.⁵⁸ A larger Bangladeshi study of 262 women with breast cancer and 262 matched controls without breast cancer revealed a 20.6-fold increased odds of breast cancer following abortion.⁵⁹

There are a number of factors involved in the development of breast cancer, including genetics, age of first full-term pregnancy, total number of full-term pregnancies, use of hormonal contraceptives, cumulative time breast-feeding, diet, and obesity. Thirty years ago women in Bangladesh married, bore their first child around age 15, had 6-10 children, breast-fed each child for about 3 years, and were often thin from malnutrition. This was associated with extremely low rates of breast cancer. In the West, however, women tended to have their first pregnancy in their twenties, have about 2 children, have much lower breast-feeding rates and breast-fed each child for a much shorter time, typically use hormonal contraceptives, and eat a high-fat diet leading to higher rates of obesity, resulting in elevated baseline rates of breast cancer. If abortion increases the risk of breast cancer, we would expect to see that the increase in risk of breast cancer following induced abortion is much more apparent in countries such as India and Bangladesh now, while competition from other risk factors is still low among women over 40, compared to the West where other risk factors are currently prominent. This indeed is what is being reported.

Despite 74 studies worldwide, whether or not induced abortion is associated with increased breast cancer risk remains controversial. Due to the many potential confounding variables, better studies are needed comparing the rates of breast cancer among women according to whether they had an induced abortion, childbirth, or neither in

their teens, as well as the effect of childbirth and its timing relative to any induced abortion history. The establishment of a national databank through detailed mammography questionnaires could answer some of these questions.⁵³ Given the high prevalence of induced abortion, answering these questions ought to be a priority.

Long-term risk of maternal mortality

Contrary to public perception, there is a significantly higher risk of a woman dying in the years after an induced abortion than in the years after giving birth. This has been shown in studies comparing pregnancy records with death records in California, Finland, and Denmark. The risk peaks during pregnancy and one year postpartum, but remains higher for at least 10 years.

Table 2. Relative Risk of Maternal Death After Induced Abortion Compared to Birth in California, Finland, and Denmark

Time after induced abortion (IA) or birth	1st year: all IAs Finland ¹¹	0-6 months: ≤ 12week IAs Denmark ¹²	0-2 years: >12 week IAs Denmark ¹²	Years 1-8: all IAs California ²²	0-10 years: ^c ≤12 week IAs Denmark ¹²	0-10 years: ^c >12 week IAs Denmark ¹²	Long Term: 1 IA Denmark ⁶⁰	Long Term: 2 IAs Denmark ⁶⁰	Long Term: 3 IAs Denmark ⁶⁰
Overall mortality	3.5 ^a	2.0	4.3	1.61 ^b	1.4 ^b	2.4 ^b	1.45 ^b	2.14 ^b	2.91 ^b
Suicide	6.5 ^a			3.12 ^b					
Homicide	14 ^a			1.93 ^b					
Accident	4.2 ^a			1.44 ^b					
All violent causes				1.78 ^b					
All natural causes	1.6 ^a			1.44 ^b					
Mental disease				3.21 ^b					
Circulatory				2.00 ^b					
Cerebrovascular				4.42 ^b					
AIDS				2.96 ^b					

^aRelative risks (RR) in Finland for induced abortion compared to childbirth are calculated from the RR for abortion compared to non-pregnancy divided by the RR for birth compared to non-pregnancy. RR in this study were calculated from RR of mortality after childbirth compared to non-pregnant controls (all RR were less than one, but those from violence were too rare to meet statistical significance) and RR of mortality from induced abortion compared to non-pregnant controls (all except natural deaths had 95% confidence levels exceeding 1.0).

^bAll values from California and Denmark were statistically significant ($p < 0.05$), except for accidents in California.

^cAll Confidence Intervals exclude 1.0; the numbers of those with late abortions were insufficient for chi-square tests until after 2 years, when cumulative mortality rates for both early and late abortions remained significant at $p < .001$. With lower annual numbers, significance varied year to year, but the mortality rate from birth never exceeded that of either early or late abortion.

The study from California²² linked claims from among 173,279 Medicaid recipients who had either an abortion or birth in 1989 with death certificates between 1989 and 1997. Results were controlled for both age and past psychiatric history within the preceding year. Mortality risk doubled for the first 4 years following an abortion compared to no abortion, declining thereafter but still remaining elevated (insignificantly) for the next 4 years.

The first Danish study¹² was a record linkage of 463,473 women in the 10 years following pregnancy, which adjusted for year of the woman's birth and age at first pregnancy. Women who had induced abortions after 12 weeks gestation had the highest mortality rates, followed by those who had first trimester induced abortions, then by those with spontaneous abortions, while those who gave birth had the lowest mortality rates. Another Danish study linked the following records: Death records from 1980-2004 of the million women born in Denmark between 1962 and 1993 and birth/miscarriage/induced abortion records from 1970 onward. The study controlled for other pregnancies and age at last pregnancy, comparing risks of death for women with 1, 2, and 3 abortions with those with no abortions⁵¹ and showed increasing mortality with increasing number of abortions (dose effect).

Finnish studies also showed similar results. One study linked birth, spontaneous abortion, and induced abortion records with death records from the following year on all Finnish women over a 7-year period.¹¹ A subsequent study with 14 years of data (including the initial 7 years) found similar results: Compared to women who were not pregnant, women with a history of induced abortion had significantly higher mortality rates; those with a history of spontaneous abortion had similar rates to the controls; and those who gave birth had significantly lower mortality rates.¹³

Table 3. Mortality Rate per 100,000 Finnish Women in the Following Year According to Pregnancy Outcome¹³

Birth	Spontaneous abortion	Non-pregnant women	Induced abortion
28	52	57	83
CI .28 (.24-.32)	CI .91 (.71-1.17)	1.00 (control)	CI 1.45 (1.22-1.72)

Like the first Finnish study, the subsequent study did not directly compare induced abortion to childbirth, but rather compared each to a control incidence in non-pregnant women. Childbirth was consistently safer than non-pregnancy. Except for natural causes, induced abortion was consistently and significantly riskier than non-pregnancy. A third Finnish study evaluating the risk of suicide did make a direct comparison of the risk following induced abortion to the risk following childbirth and found nearly a 6-fold increase.⁶¹

III. Risks of Abortion to Future Pregnancies and Subsequent Children

Risks to future children

Some of the risks to future children include prematurity, low birth weight, and, with sharp curettage abortions, placenta previa. Abortion providers claim that "Abortions performed in the first trimester pose virtually no long-term risk of such problems as infertility, ectopic pregnancy, spontaneous abortion (miscarriage) or birth defect, and little or no risk of preterm or low-birth-weight deliveries."⁵¹ However, while studies have not shown any increased rate of birth defects (except in the few babies who survive abortion attempts), studies regarding induced abortion and subsequent ectopic pregnancies, spontaneous abortions, and infertility have yielded conflicting results. Meta-analyses to elucidate possible relationships have not been undertaken. Numerous studies have shown an increased risk for very premature/very low birth weight babies following abortion, as will be discussed below.

Risk of spontaneous abortion

Thorp's 2003 review of the risks of induced abortion cites 5 studies¹⁷ from 1980-1998 that do not show a significant association between induced abortion and miscarriage. All of these studies had wide confidence intervals and were likely underpowered to demonstrate statistical significance. (Studies that are not designed to look for these early losses could potentially have false negative results.) Since then, a 2003 Chinese study of first trimester suction abortions showed an increase in subsequent early spontaneous abortions (≤ 7 weeks) of 144%.⁶²

Table 4. Spontaneous Abortion (SAB) Following Induced Suction Abortion
(Compared to incidence in primagravidas)⁶²

“Miscarriage” before 28 weeks ^a	First seen at 5-7 weeks (by 49 days)	First seen at 8 weeks (50-56 days)	First seen at 9 weeks (57-63 days)	Total relative risk of spontaneous abortion
Relative risk (RR) after first trimester suction abortion	2.44 (1.16-5.15)	1.43 (0.68-2.98)	1.42 (0.84-2.38)	1.72 (1.09-2.72) (first trimester only)
Overall SAB rate (through 28 weeks) in primigravidas	7.4%	6.0%	2.7%	4.0%
Overall SAB rate (through 28 weeks) in those with previous suction abortions	13.0%	8.3%	3.6%	5.5%

^aThe Chinese define “miscarriage” as spontaneous pregnancy loss through 28 weeks; the increase in the second trimester after induced abortion was lower than in the first trimester (overall RR 1.24 [0.70-2.22], with a RR of 1.55 [1.08-2.23] for the whole 28 weeks).

A 2014 Chinese study of 1860 women (520 hospitalized with spontaneous abortions at under 13 weeks’ gestation and 1240 controls) showed a significant and rising association between previous induced abortion and subsequent spontaneous abortion.⁶³

Table 5. Incidence of Spontaneous Abortion After Variable Number of Induced Abortions (China)

	% of cases	% of controls	Adjusted Odds Ratio
0 induced abortions	34.6%	54.0%	1.0
1 induced abortion	29.6%	26.9%	1.19 (1.01-1.37)
2 induced abortions	20.2%	15.1%	1.61 (1.19-3.12)
≥3 induced abortions	15.5%	3.9%	2.56 (1.33-4.58)

Despite the lack of significant findings in earlier US studies, these Chinese studies suggest that larger scale studies are needed, including studies comparing the incidence of miscarriage following surgical versus medical abortions, as well as the effect of childbirth prior to induced abortion.

Risk of secondary infertility

Most studies investigating (and demonstrating) secondary infertility were done before the widespread use of suction abortions, drug-induced abortions, and routine antibiotic coverage for sexually transmitted infections (STIs) and, therefore, may not be pertinent to current medical practice. One study from Greece involving modern abortion methods demonstrated a 2-fold increase in secondary infertility following previous induced abortion.⁶⁴

Risk of ectopic pregnancy

Initial studies from Greece in 1972 using mainly sharp curettage had shown a 10-fold increase in subsequent ectopic pregnancies,⁶⁵ but more recent studies show either no relationship between induced abortion and ectopic pregnancy or a smaller trend that does not reach statistical significance. Some studies showed a statistically non-significant trend toward increased ectopic pregnancies with multiple abortions. STIs (especially pelvic inflammatory disease) may mediate the association between induced abortion and ectopic pregnancy as well as secondary infertility. Because antibiotic coverage for surgically induced abortion is now standard of care (but not universal), this could account for the variability in study results.

Risk of placenta previa

Placenta previa involves an abnormally positioned placenta that puts mothers and their babies at risk for dangerous hemorrhaging, sometimes necessitating a hysterectomy.⁶⁶ Past studies have found an association between induced abortions as well as spontaneous abortions and subsequent development of placenta previa,^{67,68,69} however these studies did not distinguish the method of induced abortion. Taylor, et al. found a 28% increase in placenta previa in 1984-87 after induced abortion and noted that in 1984-85, 98% of induced abortions were by “suction curettage”.⁷⁰ As the abortions had been previous to the study period, it is not clear how many of them were actually by suction versus by the older method of “sharp” curettage (traditional dilation and curettage or D&C). Johnson’s smaller study from the Seattle area from 1990-92 did distinguish by method (46 cases by suction and 22 cases by sharp) and found an increase in placenta previa only with abortion induced by sharp curettage.⁷¹ This fits the theory that procedures which cause scarring to the lining of the uterus such as C-sections, intrauterine devices (IUDs), intrauterine infections (including post-abortion ones) and cutting methods of dilation and curettage (D&C) used for both induced and spontaneous abortions are what puts women at significant risk for future development of placenta previa. More recent studies from Taiwan⁷² and Iran⁷³ again show an increased risk for placenta previa after abortion, but associated instrumentation^{72,73} and distinguishing between induced versus spontaneous abortions⁷³ is not provided. Since suction replaced sharp curettage as early as 1970 in the US as the main method of first trimester abortions and accounted for 96% of those by 1998,⁷⁴ it may be that induced abortions are no longer a significant risk factor for placenta previa in countries such as the US that use suction abortion, but they may still be a risk factor where sharp D&Cs continue to be used.

Risk of future premature births

An increase in prematurity, especially in extremely premature, very low birth weight babies, has repeatedly been demonstrated regarding induced abortions.^{6,17,75} Compared with mothers who had previously given birth, mothers with a history of a previous misoprostol abortion had a 33% increased risk of subsequently giving birth prematurely at 16-36 weeks. This increased risk was described as “reassuring” by the authors of the study.⁷⁶ One study reported no increase in premature births following medical abortions, but the data revealed a 69% increase in births prior to 36 weeks and a 3.6-fold increase in births before 32 weeks if the mother had a medical abortion (prior to 7 weeks’ gestation) and required a surgical curettage following mifepristone. In addition, women with a history of both medical and surgical abortions had double the risk of delivering prematurely.⁷⁷ An earlier US study showed that 7% of women at 49 days or less gestation and 17% to 23% of women at 7-9 weeks’ gestation who were given mifepristone and misoprostol for medical abortions required follow-up surgical abortion procedures for completion.⁷⁸ In 2009, two systematic reviews with meta-analyses were published. The first review found that a single prior abortion increased the risk of a future very premature birth by 64%;⁷⁹ the second review found that a single prior abortion increased the risk of preterm birth by 36%, while more than one abortion increased the risk for preterm birth by 93%.⁸⁰ A 2012 study from Finland involving more than 300,000 primiparous mothers showed the risk of delivering a very premature baby at under 28 weeks’ gestation was increased by 1.19-, 1.69-, and 2.78-fold for those who had had 1, 2, or 3 prior induced abortions.⁸¹

A Scottish study found a 37% increased risk of prematurity in women whose first pregnancy was intentionally aborted compared with primigravidae and a 66% increased risk compared with women who had previously given birth. However, the study did not find a dose-effect relationship with multiple abortions. Surgical abortions caused a 25% higher risk than medical abortions.⁸² Findings from a 2012 Canadian study revealing an increased risk of prematurity after induced abortion, especially very and extremely preterm births, are shown in Table 6 (next page).

Table 6. Gestational Age and Prematurity According to Previous Abortions, 2001-2006⁸³

Gestational age at delivery	1 previous abortion	P value	≥2 previous abortions	P value
	Odds Ratio (OR) (95% Confidence Interval [CI]) ^a		OR (95% CI) ^a	

< 37 weeks	1.08 (0.95 - 1.26)	0.28	1.01 (0.81 - 1.25)	0.93
< 32 weeks	1.45 (1.11 - 1.90)	0.01	1.73 (1.20 - 2.50)	0.003
< 28 weeks	1.71 (1.21 - 2.42)	0.002	1.53 (0.90 - 2.61)	0.12
< 26 weeks	2.17 (1.41 - 3.35)	< 0.001	1.85 (0.94 - 3.64)	0.08
< 24 weeks	2.03 (1.17 - 3.54)	0.01	2.02 (0.90 - 4.56)	0.09

^aAdjusted for maternal age, marital status, smoking, alcohol, education, and BMI

Some have claimed that abortion causes “little or no” risk of premature birth.⁵¹ Indeed, this is the case if all premature births (under 37 weeks’ gestation) are included in the comparisons to dilute the effect of induced abortion-associated very preterm and extremely preterm births. In a 2005 March of Dimes study, only 6% of premature babies were born prior to 28 weeks, yet they accounted for one-third (more than \$5 billion) of the total medical costs (until the child was 7 years old) associated with premature birth.⁷⁵

Induced abortion is estimated to account for a 71% increase in these extremely premature births, including a more than 2-fold increase in the most critically ill babies, those born at less than 26 weeks’ gestation.⁸³ A 2007 study of the cost involved with preterm deliveries at 24-31 weeks showed that induced abortion increased the early preterm delivery rate by 31.5%, with an estimated yearly increase in initial neonatal hospital costs related to induced abortion of more than \$1.2 billion. The yearly human cost estimate includes 22,917 excess very preterm births (under 32 weeks) and 1096 excess cerebral palsy cases in very-low-birth-weight newborns of under 1500 grams.⁸⁴ Using more conservative figures, McCaffrey estimated that more than 10,000 babies are born annually at a very low birth weight of under 1500 grams as a result of previous maternal abortion, with 2462 deaths and 7908 survivors, many of whom have significant morbidity.⁸⁵ The complications of prematurity are well-established. They include respiratory distress syndrome, bronchopulmonary dysplasia, necrotizing enterocolitis, intraventricular hemorrhage, hyperbilirubinemia, retinopathy of prematurity, hearing loss, motor and cognitive disabilities, and school failure.^{86,87}

IV. Possible Risks to Current and Future Children

The theory that a parent’s decision to abort a child could impact already-born and future children needs to be studied. Theoretically, these children may experience survivor guilt and low self-esteem, viewing themselves as dispensable (because their sibling was aborted), as well as anger, resentment, and grief, emotions that may emerge even if the sibling does not learn of the abortion until adulthood. In addition, there is evidence that maternal depression as well as alcoholism and drug abuse (all of which are found more commonly in women who have abortions) are detrimental to children. The increased maternal mortality rates associated with abortion also increase the risk of children losing their mother early in life.

Post-abortive mothers may also be more likely to vilify and abuse their future children while idealizing the lost aborted child, a phenomenon described with other types of perinatal loss.⁸⁸ High-quality studies investigating a possible relationship between induced abortion and abuse of a woman’s other children are difficult to find, but given the relationship between substance abuse and child abuse, and between maternal mental health problems and child abuse, there is certainly a theoretical possibility of a connection. Minimizing the impact of confounding variables to prove or disprove causation will be a major scientific challenge.

Risk of fetal pain

Although more than half of induced abortions are performed during the first 8 weeks of gestation when the embryo is most likely unable to feel pain, there is increasing evidence that pain is experienced with increasing gestational age. However, this remains a controversial subject with disagreement over what is required for the perception of pain. Some argue that a functioning cortex is required for pain perception, while others argue that the fetus is continually unconscious.⁸⁹ Still, others point out that the thalamus, rather than the cortex, is necessary for pain perception because infants and children with hydranencephaly who have a total or near-total absence of cerebral cortex respond to painful and pleasurable stimuli. The subcortical plate, rather than the cortex, may be used during fetal life. Glover notes that, from 16-18 weeks, fetuses show cerebral blood flow responses followed by hormonal stress responses to noxious stimuli.⁹⁰ Fetal anesthesia suppresses these responses.^{91,92} Nociceptors start forming from 7 weeks' gestation and are present throughout the body by 14-20 weeks. Spinothalamic connections form between 14 and 20 weeks, reaching the subplate between 13 and 16 weeks. Thalamocortical connections then form between 17 and 26 weeks. Due to a general consensus regarding the concern for fetal pain, fetal anesthesia is routinely given for procedures at 18 weeks onward. A thorough review of the literature (pro and con), including citation of original sources, is available.^{93, 94} For maternal anesthesia to provide adequate pain protection for the unborn child, it would have to avoid metabolism by the mother's liver, enter her blood stream, cross the placental membrane, reach the unborn child's circulation system in sufficient concentration, and cross the child's blood/brain barrier. The dose of anesthesia necessary to pass all five steps would endanger the mother.⁹⁵ While the percentage of babies aborted late enough in gestation to possibly perceive pain is low, the absolute numbers of affected babies is considerable (see Table 7 below). Late-term abortions inflict severely noxious stimuli, including bodily dismemberment.

Table 7. Summary of Neurodevelopment Necessary to Perceive Pain

Gestational age (by last menstrual period)	% of abortions in US, 2011 ⁹⁶	~# US abortions, 2011 ^{97,51}	Development of neuro/endocrine pain pathways ⁹⁴	Potential of pain perception during abortion ⁹⁴
≤ 8 weeks	63.1%	667,914	None	None (agreement)
9-12 weeks	25.7%	272,035	Sensory fibers spread from around mouth (9 weeks); connections between peripheral receptors and afferent fibers in spinal cord	Reflex activity to painful stimuli, but no evidence of brain involvement
13-15 weeks	6.2%	65,720	Connections to thalamus begin at 14 weeks and are complete by 20 weeks	Earliest possible nociception, but evidence weak
16-20 weeks	3.6%	38,160	Stress reaction by 18 weeks and brain blood flow alters in response to painful stimuli; spinothalamic connections by 19-20 weeks; thalamic-subplate connections form at 17 weeks and spread through 25 weeks (then regress as cortex forms)	Sufficient response to pain to give anesthesia during fetal surgery (18 weeks); some dispute fetal perception of pain
≥ 20 weeks	1.2%	12,720	Thalamic fibers reach cortical plate at 23-24 weeks and cortical connection at 29-30 weeks	Disputed. Significant evidence that fetus uses cortical subplate and/or thalamus for perception of pain; others believe cortical consciousness necessary at 29 weeks

V. Demographics

There are two major sources that provide demographic information about abortion: the CDC, which collects data from reporting state health departments,⁹⁸ and the Guttmacher Institute (whose Guiding Principles include

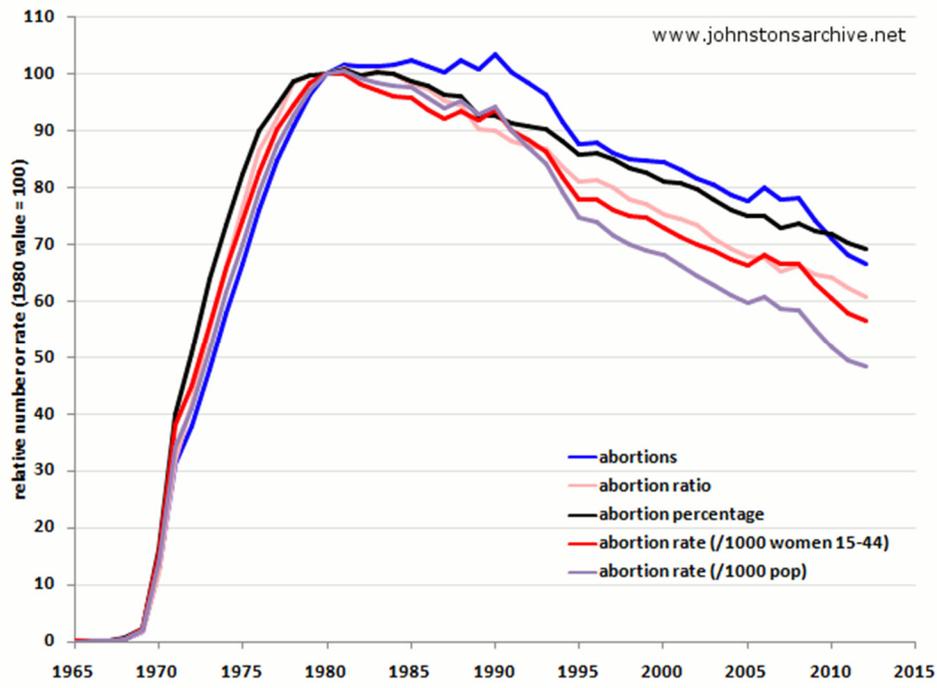
:.exercise the right to choose safe, legal abortion”),⁹⁹ which collects data directly from abortion facilities, including those in states with no public health reporting requirements. Therefore, Guttmacher’s data on abortion numbers are more complete than that of the CDC.⁹⁷ To add to the confusion, the CDC and Guttmacher define the “abortion ratio” differently: the CDC uses the number of abortions per 1000 live births¹⁰⁰ while Guttmacher uses the number of abortions divided by abortions plus births.⁹⁷ The figure below showing abortion trends uses Guttmacher data and CDC definitions.

While California does not collect abortion data, according to the Guttmacher Institute, the state leads the nation with 17.2% of all abortions performed in the US and has the seventh highest rate of abortions per 1000 women of reproductive age (exceeded only by New York, Maryland, the District of Columbia, Delaware, New Jersey, and Florida). In 2011, 181,730 women obtained abortions in California, producing a rate of 23.0, compared to a US rate overall of 16.9. This reflects a 16% decrease since 2008, when the rate was 27.4.⁹⁷

United States Abortion Rates, 1960-2012¹⁰¹

Compiled by Wm. Robert Johnston

last modified 28 November 2014



Note: Data are scaled relative to 1980 (1980 value = 100). Plotted data include:

- Abortions – known or estimated legal abortions occurring in the US
- Ratio – abortions per 1000 live births
- Percentage – abortions as percentage of total pregnancies (live births + abortions)
- Rate per 1000 women aged 15-44
- Rate per 1000 population

A number of social patterns have emerged from the available demographic information. Please see Table 8 (below) for details.

1. *Social factors.* Eighty-nine percent of women with an abortion history have at some time been in a cohabiting relationship, and 41% have been in three or more cohabiting relationships.¹⁰²
2. The number married to someone other than the father of their child is not specified. While the 23% of US women aged 18-44 who never attend religious services account for 41% of the abortions among those aged 15-44, the 24% who attend religious services weekly account for only 15% of the abortions.⁹⁶
3. In both 1987 and 2004, 1% were pregnant as a result of rape.¹⁰³
4. Thirty percent of girls whose sexual debut occurred before age 14 have had at least 1 abortion (as compared to 12% of girls who defer sex until their early 20s).¹⁰⁴
5. Women enrolled into a study on contraceptives on the day of their abortion were 20% more likely to discontinue their contraceptive method than the women who never had an abortion. Women who had a recent abortion or previous abortion were 60% more likely to have a pregnancy during follow-up than women who never had an abortion.¹⁰⁵
6. In 2011, 49% of women who had an abortion had not been using contraception.⁹⁷
7. In 2008, a full 50% of abortions were performed on women who had had a previous abortion.⁹⁷
8. *Age.* The number of teenagers undergoing induced abortion is much lower than the number of women in their twenties. The percentage of women in whom abortions are induced is inversely related to the age of the mother through the mid-thirties.⁹⁶
9. Teenage abortion rates in 2010 were highest in New York (32 abortions per 1000 women), Delaware (28), New Jersey (24), Hawaii (23), and Maryland (22) and lowest in South Dakota (4), Utah (4), Kansas (5), Nebraska (5), Kentucky (6), and North Dakota (6). More than half of teenage pregnancies (excluding miscarriages and stillbirths) ended in abortion in three states: New York (58%), New Jersey (55%), and Connecticut (52%). From 1986 to 2010, the proportion of teenage pregnancies ending in abortion declined by one-third and the 2010 teenage abortion rate was the lowest since abortion was legalized and 66% lower than its peak in 1988.¹⁰⁶
10. Parental consent and notification laws have been found to decrease both teenage abortions and the number of teen pregnancies.¹⁰⁷
11. From 2008 to 2010, the pregnancy rate decreased by 15% among teenagers aged 15-19 and by 12% among 20 to 24-year-olds.¹⁰⁵ 6

Table 8. Summary of Demographics Related to Induced Abortion in the US

	Number of abortions	% of abortions	Abortion rate per 1000 women	% of pregnancies aborted ^a	Abortion index (2008) ^b
Total 2011	1,058,500 ²		16.9 ²	21.2% ²	
Total 2008	1,212,400 ²		19.4 ²	22.5% ²	
<i>Peak</i>	<i>1,608,600 in 1990 peak¹⁰⁸</i>		<i>Peak 29.3 in 1980-1981¹⁰⁸</i>	<i>30.4% in 1982¹⁰⁸</i>	
Age <15		0.4% ⁹⁶		52.6% ¹⁰⁶	
15-17		6.2% ⁹⁶	8.4 ¹⁰⁶	32.6% ¹⁰⁶	
18-19		11% ⁹⁶	23.7 ¹⁰⁶	28.8% ¹⁰⁶	
All teens		17.6% ⁹⁶	14.7 (2010) <i>peak</i> 43.5 in 1988 ¹⁰⁶	30.4% (all teens) <i>peak</i> 46% in 1985 (ages 15-19) ¹⁰⁶	

	Number of abortions	% of abortions	Abortion rate per 1000 women	% of pregnancies aborted ^a	Abortion index (2008) ^b
20-24		33.4% ⁹⁶	34.1 <i>peak 56.7 in 1990</i> ¹⁰⁶	27.6% ⁹⁶	
25-29		24.4% ⁹⁶			
Married		15% ⁹⁶	5.75 ^d		0.34 ⁹⁶
Unmarried		85% ⁹⁶			
Cohabiting		29% ⁹⁶	58.5 ^d		3.46 ⁹⁶
Single (not cohabiting)		45% ⁹⁶	19.1 ^d		1.13 ⁹⁶
Divorced (not cohabiting)		11% ⁹⁶	22.5 ^d		1.33 ⁹⁶
Never attend religious services (23% of total women aged 18-44)		41% ⁹⁶			0.56 ⁹⁶
Attend religious services weekly (24% of total women aged 18-44)		15% ⁹⁶			1.60 ⁹⁵
White		36% (all ages) ⁵¹	8.5 (teens only) ¹⁰⁶		
Hispanic		25% (all ages) ⁵¹	15.3 (teens only) ¹⁰⁶		
Black		30% (all ages) ⁵¹	34.5 (teens only) ¹⁰⁶		
6 weeks' gestation or less	352,480 ^c	33.3% ⁵¹			
7-8 weeks	315,433 ^c	29.8% ⁵¹			
9-12 weeks	272,035 ^c	25.7% ⁵¹			
13-15 weeks	65,720 ^c	6.2% ⁵¹			
16-20 weeks	38,160 ^c	3.6% ⁵¹			
More than 20 weeks	12,720 ^c	1.2% ⁵¹			
Prior abortions		50% ⁵¹			

^aCalculated from births plus abortions divided by abortions.

^bAbortion index is the number of abortions performed compared to the number expected for that proportion of the population.

^cCalculated using percentages from 2008⁸⁹ (last year available) and number of total abortions from 2011 (most recent available).⁹⁷

^dCalculated from data.⁹⁶

VI. Concluding Comments

In summary, the health risks associated with induced abortion, when compared with childbirth, are significant and substantial and can include higher long-term mortality rates from suicide and other violent causes, as well as elevated mortality rates due to natural causes. There are increased risks of breast cancer and subsequent premature births among post-abortive women. There is also an increased lifetime prevalence of mental illness and substance abuse in women who have abortions, though causality has not yet been established. Premature delivery significantly increases the chance of neurodevelopmental and other medical morbidities in the resulting offspring. Maternal mental health and substance abuse problems can place existing as well as future children at risk of maladaptive parenting, abuse, and neglect. Higher rates of associated maternal mortality and suicidality may result in children losing their mother at a young age.

While the decline in the rate of abortion over the past two decades is a very positive development, much work remains to be done to fully protect these most vulnerable unborn patients, their siblings, and their young parents. The American College of Pediatricians urges pediatricians to educate adolescent patients and their parents about the risks of promiscuous sexual activity as well as the harmful consequences of abortion and to do so before patients become sexually active. Clearly, abortion prevention is best accomplished by delaying onset of sexual debut. Mindful of the only foolproof method to accomplish these goals, pediatricians should encourage patients and parents to promote a culture of abstinence-until-marriage within their families, as well as to discourage cohabitation before marriage.^{109,110}

Pediatricians should consider including information on the risks of abortion during routine anticipatory guidance on sexuality given at appropriately-aged well-child visits and again before the patient leaves home. Furthermore, pediatricians are likely to encounter the effects of abortion not only when it involves their adolescent patients (who may be fathers or mothers to an unborn child), but also when young patients are affected by the consequences of a parent's abortion. Pediatricians therefore must be prepared to consider how the emotional toll of past abortions affects the parenting dynamics within families in their practices. Finally, from a public health perspective, pediatricians should engage in advocacy within their communities and beyond by educating about the health risks of abortion, which include an increased rate of prematurity-related morbidity, an increased risk of breast cancer, suicide, and potentially other mental illness and substance abuse, all of which can exact a heavy toll on the patient and financial burden on society.

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The American College of Pediatricians is a national medical association of licensed physicians and healthcare professionals who specialize in the care of infants, children, and adolescents. The mission of the College is to enable all children to reach their optimal physical and emotional health and well-being.

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