Research on Abortion and Preterm Birth

Prevent Preterm thanks Elizabeth Doecke, M.D. candidate 2016, for her immense contributions to this report.

The Guttmacher Institute, an abortion think tank, has conducted surveys about the reasons women have abortions. Most survey respondents said that they had not completed their childbearing. They did not feel prepared for parenthood at the time of the abortion—typically for financial reasons—but were open to parenthood in the future. In fact, some interviewees said that they were having abortions because they wanted to set up an ideal situation in which to parent the future sons and daughters they had not yet conceived.

These statements show a tragic lack of awareness of abortion's long-term consequences. Abortion is a risk factor for preterm (premature) birth in later pregnancies. A child born preterm may face lifelong health problems. And ironically, those health problems are often expensive, creating a financial burden on the family—precisely the outcome the mother sought to avoid by having an abortion.

The exact reason that abortion increases the risk for preterm birth remains unknown. Researchers have suggested several possibilities, including damage to the cervix that causes it to be weaker,[1] increased risk of infection in the uterus during pregnancy,[2] and increased risk of bleeding during pregnancy.[3] More studies are needed. The existence of a link, however, is well-established.

This document summarizes the research on abortion and preterm birth so that women can make informed health decisions for themselves and their families. Prevent Preterm believes that every woman deserves this information, regardless of whether or not she has a medical background. Therefore, Prevent Preterm has done everything possible to make this medical research accessible to laypeople, without sacrificing accuracy.[4]

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[1] Hardy G, Benjamin A & Abenhaim HA (2013) 'Effect on Induced Abortion on Early Preterm Birth and Adverse Perinatal Outcomes' *Journal of Obstetrics and Gynaecology Canada* vol.35 no.2 pp.138-143

[2] Krohn MA, Germain M, Muhlemann K & Hickok D (1998) 'Prior Pregnancy Outcome and the Risk of Intraamniotic Infection in the Following Pregnancy' *American Journal of Obstetrics and Gynecology* vol.178 no.2 pp.381-385

[3] Moreau C, Kaminski M, Ancel PY, Bouyer J, Escande B, Thiriez G, Boulot P, Fresson J, Arnaud C, Subtil D, Marpeau L, Roze J-C, Maillard F & Larroque B (2005) 'Previous Induced Abortion and the Risk of Very Preterm Delivery: Results of the EPIPAGE Study' *BJOG: An International Journal of Obstetrics and Gynaecology* vol.112 no.4 pp.430-437

[4] Some articles that explore the link between abortion and preterm birth have not been listed in this document due to their inaccessibility. For instance, they may be written in a foreign language or unavailable in online databases.

How to read the table and what to look for

Prevent Preterm has compiled the medical research into a table, beginning on page 4. As you read, bear in mind that the best studies are those that:

1) **Are peer-reviewed**: One study (MacDonald 2009) was undertaken as part of a Master of Public Health Program at Virginia Commonwealth University, and would have been reviewed by senior researchers within the field. All remaining studies in this document come from peer-reviewed journals, where the articles are assessed for accuracy and reliability by other researchers.

2) **Have a low p-value**: The value of p is a statistical measure of how reliable a study is. Simply put, studies with many participants and striking results are more reliable than those with few participants and weak results. If p is less than .05, the study is said to be "statistically significant," which means that its results are unlikely to have been caused by random chance. Many of the studies in this document are statistically significant. Studies with non-significant results have also been included, as the cumulative number of these studies suggests a trend exists that may show a relationship between abortion and preterm birth.

3) **Address alternative explanations for the results**: If a study finds that women who have had abortions are more likely to give birth preterm than women who have not had abortions, that alone is not proof that abortion causes preterm birth. Other explanations are possible. For example, we know that low-income women are more likely to have abortions. Low-income women are also less likely to receive prenatal care, and lack of prenatal care is a risk factor for preterm birth. Therefore, low income could be the real cause. In this example, low income is what is called a "confounding factor." Age is another example; older women are more likely to give birth preterm, and also more likely to have had an abortion at some point just by virtue of the fact that they have lived longer and have a longer history of being able to get pregnant.

   To avoid having results tainted by confounding factors, researchers can do one (or both) of two things. First, they can try to create a control (comparison) group that is very similar to the study group; for instance, by comparing low-income 30-year-old women who have had abortions to low-income 30-year-old women who have not had abortions. That becomes unwieldy, however, as you add confounding factors. (Some of the studies in this document address ten or more confounding factors!) The second option is to employ a mathematical formula to "control for" other possibilities; these are referred to as "controlled variables."

   Studies with many controlled variables allow you to engage in a process of elimination. If alternative explanations have been addressed, abortion is more likely to be the cause of the increased risk for preterm birth.

4) **Show a "dose-response" relationship**: If a study finds a "dose-response" relationship, this means that the risk of preterm birth increases with each abortion. A woman who has never had an abortion faces the least risk, a woman who has had one abortion faces an increased risk, and a woman who has had multiple abortions faces the greatest risk.

Note also that in a few studies, the researchers actually set out to study a different topic and made findings about abortion along the way. For example, in the A. E. Curry et al. study on page 19, the topic of study was the relationship between preterm birth and inflammation. The fact that studies on other topics corroborate the abortion-preterm birth link makes it unlikely that these results are merely due to a researcher's political bias.

The table includes six columns:

1) **Article Information**: This column contains the title and authors of each study, along with the date when it was published and the journal in which it was published. If you have access to subscription medical journals (through a college library, for example), you can use this information to access the full text of the article. The articles are ordered from newest to oldest.

2) **Results**: This column shows the factor being examined (e.g. induced abortion or spontaneous abortion) and the increased risk or odds of the outcome happening (e.g. induced preterm birth, spontaneous preterm birth, or premature rupture of membranes).

   Some studies combine induced abortions and spontaneous abortions as one factor. "Spontaneous abortion" is the medical term for miscarriages; it is not what laypeople think of as "abortion." However, women who suffer miscarriage sometimes have to undergo a dilation and curettage procedure to remove the remains of the miscarried child.[5] Dilation and curettage is also used as an abortion procedure when the fetus is alive. Accordingly, if a researcher is specifically interested in the risks associated with dilation and curettage abortion, it is unsurprising that spontaneous abortions would also be included.

   The outcomes studied include both spontaneous and induced preterm birth, as well as premature rupture of membranes (when the waters break early). An induced preterm birth occurs when the woman is given medication to cause early labor, while a spontaneous preterm birth is when labor happens on its own. Induced preterm birth is often done for medically necessary reasons that may be related to prior abortions—such as premature rupture of membranes, infection inside the uterus or the placenta becoming unattached.[6] Premature rupture of membranes is closely related to preterm birth; it usually leads to delivery within one week.[7]

3) **Study Description & Other Comments**: This column contains information on how the study was carried out and what data was collected. It also contains any extra information that might be helpful in understanding the result, such as whether the study found a dose-response relationship (see above).

4) **Study Group**: This column describes the study group and gives the number of people in this group.

5) **Control Group**: This column describes the control group and gives the number of people in this group.

6) **Controlled variables or confounding factors adjusted for**: This column lists the alternative explanations addressed in the study (see above).

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[5] Hemminki E (1998) 'Treatment of Miscarriage: Current Practice and Rationale' *Obstetrics and Gynecology* vol.91 no.2 pp.247-253

[6] Bhattacharya S, Lowit A, Bhattacharya S, Raja EA, Lee AJ, Mahmood T & Templeton A (2012) 'Reproductive Outcomes Following Induced Abortion: a National-Register Based Cohort Study in Scotland' *BMJ Open* vol.2 no.4 pii: e000911. doi: 10.1136/bmjopen-2012-000911; Wing DA (2014) *Princples of Labor Induction* UpToDate, viewed 14th February 2014 <http://www.uptodate.com/contents/principles-of-labor-induction>

[7] Duff P (2014) *Preterm Premature (Prelabor) Rupture of Membranes* UpToDate, viewed 14th February 2014 <http://www.uptodate.com/contents/preterm-premature-prelabor-rupture-of-membranes>

Glossary of Terms

Parity is the number of times a woman has given birth. A woman who is parity one has given birth once, a woman who is parity two has given birth twice, etc. It includes stillbirths but not early miscarriages or abortions.

Gravidity is the number of times a woman has been pregnant, regardless of whether the pregnancy or pregnancies ended in birth, stillbirth, abortion, or miscarriage.

A **registry study** is an observational study in which researchers gather information but do not make any changes to how the study and/or control group are being treated.

In a **meta-analysis**, sometimes called a "study of studies," the results from several different studies are gathered together and mathematically analysed to give one overall result.

In a **literature review**, the published knowledge in a particular area is collected and reviewed.

A **medical abortion** is one that is performed using medication rather than surgery. **Mifepristone** is a medication commonly used in medical abortions.

Summary of Published Research on Abortion and Preterm Birth

Article Information	Results (Risk of Preterm Birth*)		Study Description & Other Comments	Study Group	Control Group	Controlled variables or confounding factors adjusted for
	Group	Increased risk or odds				
"To Study the efficacy of Digital and Transvaginal Ultrasonographic measurement of cervical length in asymptomatic high risk women at POG 16-24 weeks as a predictor of preterm delivery and progesterone and cerclage vs Progestrone alone for short cervical length in prevention of Preterm labour" R. Sharma S. Minhas R. Sood February 2015-03-30 *International Journal of*	Two or more previous abortions	33% rate of preterm delivery compared to overall 14.4% rate for all women involved in the study p = 0.014	Subjects were recruited from women presenting for care at Kamla Nehru state hospital for mother and child, Indira Gandhi medical college, Shimla. Information collected included social and demographic factors, obstetric and reproductive history, and pregnancy outcomes.	22 women with a preterm single delivery	131 women with a full-term single delivery	None

Reproduction, Contraception, Obstetrics and Gynecology Vol.4 no.1 pp.146-151						
"Risk factors for preterm premature rupture of membranes in Chinese women from urban cities" Q. Zhou W. Zhang H. Xu H. Liang Y. Ruan S. Zhou X. Li August 2014 *International Journal of Gynecology and Obstetrics* Vol.127 no.3 pp.254-259	Three or more previous induced abortions	34% increased odds of preterm premature rupture of membranes at 34-36 weeks gestation p = 0.038 47% increased odds of preterm premature rupture of membranes at 28-33 weeks gestation p = 0.001 155% increased odds of preterm premature rupture of membranes before 28 weeks gestation p < 0.001	Women were recruited at their first antenatal visit and enrolled once delivered. Women were recruited by the Chinese Obstetric Pregnancy and Delivery Collaborated Group from Beijing, Shanghai, Xi'an, Nanjing, Jinan, Chengdu, Shenyang, Wuhan, Guangzhou, Changchun, Urumqi, Hohhot, Taiyuan and Cangzhou. Information collected included social and demographic factors, maternal characteristics, medical history, reproductive history and previous pregnancy outcomes. Other comments: Univariate analysis showed a dose-response relationship in women with one, two or three or more previous induced abortions.	3,077 women with preterm premature rupture of membranes at or prior to 36 weeks gestation	95,286 women with a full-term delivery and no preterm premature rupture of membranes	• Maternal age • Paternal age • Residency status • Smoking status • Alcohol consumption • Parity • History of multiple pregnancy • Medical history • Family history of disease • Induced abortions • Spontaneous abortions • Fetal death • Stillbirths • Early neonatal death • Fetal abnormality • Previous preterm birth
"Pregnancy loss managed by cervical dilatation and curettage increases the risk of spontaneous preterm birth" F. P. McCarthy A. S. Khashan R. A. North M. B. Rahma J. J. Walker P. N. Baker G. Dekker L. Poston L. M. McCowan K. O'Donoghue L. C. Kenny SCOPE Consortium December 2013	Single pregnancy loss managed by cervical dilation and curettage	66% increased odds of spontaneous preterm birth p = 0.008	Data was taken from the SCOPE study, which collected information on women giving birth for the first time in multiple centers in New Zealand, Australia, Ireland and UK. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Pregnancy loss was defined as one or two miscarriages and/or one or two terminations. The number of women with three or four pregnancy losses was too small to draw conclusive results from. Results show a dose-response relationship.	974 women with a history of one pregnancy loss 249 women with a history of two pregnancy losses 21 women with a history of three or four pregnancy losses All women had single pregnancies and were giving birth for the first time	4221 women with no history of miscarriage or termination All women had single pregnancies and were giving birth for the first time	• Maternal age • Smoking status • Alcohol consumption • Ethnicity • BMI • Infant sex • Marital status • Income
	Two pregnancy losses managed by cervical dilation and curettage	132% increased odds of spontaneous preterm birth p < 0.001				
	One previous termination	48% increased odds of spontaneous				

Human Reproduction Vol.28 no.12 pp.197-206		preterm birth p = 0.03				
"Identifying risk factors for very preterm birth: a reference for clinicians" L. F. Watson J. A. Rayner D. Forster May 2013 *Midwifery* Vol.29 no.5 pp.434-439	One previous induced abortion	102% increased odds of very preterm birth p = 0.004	Women were selected from among those having a single birth in Victoria, Australia, between April 2002 and March 2004. Data was collected via interview and questionnaire, and included social and demographic factors, maternal characteristics, maternal health conditions (before and during pregnancy) reproductive history and pregnancy outcomes. Most of the test group came from three main tertiary hospitals in Victoria. Other comments: Results show a dose-response relationship.	603 women with a single very preterm birth (between 20 and 32 weeks gestation)	796 women with a single term birth	• Maternal age • Country of birth • Marital status • Smoking status • Alcohol consumption • Illicit drug use during pregnancy
	Two previous induced abortions	250% increased odds of very preterm birth p =0.002				
"The influence of pregnancy termination on the outcome of subsequent pregnancies: a retrospective cohort study" B. L. Scholten G. C. Page-Christiaens A. Franx C. W. Hukkelhoven M. P. Koster May 2013 *BMJ Open* Vol.3 no.5 doi: 10.1136/bmjopen-2013-002803	Previous induced abortion	52% increased odds of very preterm birth p < 0.001 67% increased odds of birth pre-28 weeks p < 0.001	Data was obtained from the Netherlands Perinatal Registry (PRN) (in which 96% of deliveries post-20 weeks gestation are registered) for the period between January 2000 and December 2007. Data included social and demographic factors, maternal characteristics, reproductive history, pregnancy outcomes and infant outcomes.	16,000 women with single pregnancies and a history of pregnancy termination	1,341,894 women with single pregnancies and no history of pregnancy termination	• Maternal age • Ethnicity • Socioeconomic status • Parity • Smoking status • Drug dependence • Pyelitis[8] • Polyhydramnios[9] • History of spontaneous preterm birth • History of cervical incompetence • Shirodkar's procedure[10] • History of uterine myoma[11] • History of cervical surgery
"The utility of screening for historical risk factors for preterm birth in women with known second trimester cervical length" M. T. Mella A. D. Mackeen D. Gache	One or more dilation and curettage in women with a short (< 25mm) cervix	721% increased risk of preterm birth when compared to control group p = 0.01	Subjects were recruited from women presenting for routine prenatal visits, with consenting women being screened for cervical length. Data was also collected on social and demographic factors, maternal characteristics, reproductive history, pregnancy complications and pregnancy outcomes. Other comments:	50 women with a single gestation and cervical length < 25mm	589 women with a single gestation and cervical length ≥ 25mm	None

[8] Inflammation of the kidney
[9] Excessive fluid in the amniotic sac
[10] Surgical procedure in which the cervix is stitched closed
[11] A benign tumor in the uterus

J. K. Baxter V. Berghella May 2013 *The Journal of Maternal-Fetal and Neonatal Medicine* Vol.26 no.7 pp.710-715			The 721% increased risk of preterm birth in women with a short cervix and a history of one of more dilation and curettages can also be compared to the non-significant (p = 0.8) 122% increased risk for women with a short cervix and no history of dilation and curettage.			
"Contribution of risk factors to extremely, very and moderately preterm births - register-based analysis of 1,390,742 singleton births" S. Raisanen M. Gissler J. Saari M. Kramer S. Heinonen April 2013 *PLoS One* Vol.8 no.4 doi: 10.1371/journal.pone.0060660	One or more previous induced abortions	28% increased odds of extremely preterm (prior to 28 weeks) birth p < 0.001 16% increased odd of very preterm birth p < 0.001 7% increased odds of preterm birth p < 0.001	Data was obtained from the Finnish Medical Birth Register for the period between 1987 and 2010. Data was collected on single births and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	4,452 women with an extremely preterm (prior to 28 weeks gestation) single birth 6,213 women with a very preterm single birth 54,177 women with a preterm single birth	1,338,438 women with a single term birth	• Maternal age • Parity • Pre-pregnancy BMI • Smoking status • Marital status • Socioeconomic status • Employment • Number of previous deliveries • Number of previous miscarriages • Number of prior terminations • IVF • Obstetric complications & interventions • Infant gender • Birthweight
"Effect of induced abortions on early preterm births and adverse perinatal outcomes" G. Hardy A. Benjamin H. A. Abenhaim February 2013 *Journal of Obstetrics and Gynaecology Canada* Vol.35 no.2 pp.138-143	One previous induced abortion	45% increased odds of very preterm birth p = 0.01 71% increased odds of birth pre-28 weeks p = 0.002 117% increased odds of birth pre-26 weeks p < 0.001 103% increased odds of birth pre-24 weeks p = 0.01	Data was obtained from the McGill Obstetrical and Neonatal Database for the period between April 2001 and March 2006. Data was collected on deliveries at the Royal Victoria Hospital, Montreal, Quebec, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes.	2,276 women with one previous induced abortion 862 women with two or more previous induced abortions	14,778 women with no history of induced abortion	• Education • Smoking status • Marital status • Maternal age • Alcohol consumption • BMI

	Two or more previous induced abortions	73% increased odds of very preterm birth p = 0.003 53% increased odds of birth pre-28 weeks p = 0.12 85% increased odds of birth pre-26 weeks p = 0.08 102% increased odds of birth pre-24 weeks p = 0.09				
"Risk factors for preterm birth and small-for-gestational-age births among Canadian women" M. Heaman D. Kingston B. Chalmers R. Sauve L. Lee D. Young January 2013 *Paediatric and Perinatal Epidemiology* Vol.27 no.1 pp.54-61	Previous miscarriage, abortion or ectopic pregnancy	40% increased odds of preterm birth p = 0.04	Data was taken from the Canadian Maternal Experiences Survey, which ran between February 2006 – May 2006 in the provinces, and November 2005 – February 2006 in territories. It collected information from a random sample of mothers with a single birth who were over fifteen years of age and living with their infant. Information collected included social and demographic factors, maternal characteristics, reproductive history, medical history, medical conditions during pregnancy and pregnancy outcomes. Other comments: Miscarriage, abortion and ectopic pregnancies were grouped together as one variable. No distinction was made between spontaneous and induced abortion.	5,812 women with a single preterm birth	69,245 women with a single term birth	• Maternal age • Marital status • Recent immigrant • Education • Income • Pre-pregnancy BMI • Short stature • Weight gain during pregnancy • Smoking status • Perceived stress • Prescribed anti-depressants/ diagnosed with depression prior to pregnancy • Emotional reaction to pregnancy • Desire to be pregnant later in life • Previous medical condition • New medical condition during pregnancy • Obstetric history
"Birth outcomes after induced abortion: a nationwide register-based study of first births in Finland" R. Klemetti	One previous induced abortion	19% increased odds of birth pre-28 weeks p = 0.076	First-time mothers with singleton pregnancies between 1996 and 2008 were identified through the Finnish Medical Birth Register. Abortion data was gathered from the Abortion Register for 1983-2008. Information collected included social and demographic factors, maternal	31,083 first-time mothers with one previous induced abortion 4,417 first-time	264,190 first-time mothers with no history of previous induced abortion	• Maternal age • Marital status • Socioeconomic position • Urbanity • Smoking

M. Gissler M. Niinimaki E. Hemminki November 2012 *Human Reproduction* Vol. 27 no. 11 pp.3315-3320	Two previous induced abortions	69% increased odds of birth pre-28 weeks p = 0.009	characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	mothers with two previous induced abortions 942 first-time mothers with three or more previous induced abortions		• Previous miscarriage • Previous ectopic pregnancy
	Three or more previous induced abortions	178% increased odds of birth pre-28 weeks p = 0.002 35% increased odds of birth pre-37 weeks p = 0.012				
	Overall (one or more previous induced abortions)	27% increased odds for birth pre-28 weeks p = 0.009				
"Incidence of and socio-biologic risk factors for spontaneous preterm birth in HIV positive Nigerian women" O. C. Ezechi A. N. David C. V. Gab-Okafor H. Ohwodo D. A. Oladele O. O. Kalejaive P. M. Ezeobi T. A. Gbajabiamila R. A. Adu B. Oke Z. A. Musa S. O. Ekama O. Ilesanmi O. Odubela E. O. Somefun E. C. Herbertson D. I. Onwujekwe I. A. O. Ujah September 2012 *BMC Pregnancy and Childbirth* Vol.12 no.93 doi:10.1186/1471-	One previous induced abortion	30% increased odds of preterm birth p = 0.28	Subjects were chosen from HIV positive mothers with a viable birth who were enrolled in a Preventing-Mother-To-Child-Transmission program at the HIV Treatment Center, Nigerian Institute of Medical Research, Lagos. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes.	181 HIV positive women with a spontaneous preterm birth	1,445 HIV positive women with a term birth	• Maternal age • Parity • Marital status • Employment status • Work stress • Social class • CD4 (Helper T-Cell) count • Viral load • BMI • Infection at delivery • Previous induced abortion • Previous spontaneous abortion • Previous preterm delivery • Operative vaginal delivery • Multiple gestations • Infant gender • Pregnancy complications • HIV treatment • Medical disorders
	Two or more previous induced abortions	30% increased odds of preterm birth p = 0.23				

2393-12-93						
"Reproductive outcomes following induced abortion: a national register-based cohort study in Scotland" S. Bhattacharya A. Lowit S. Bhattacharya E. A. Raja A. J. Lee T. Mahmood A. Templeton August 2012 *BMJ Open* Vol.2 no.4 doi: 10.1136/bmjopen-2012-000911	One previous induced abortion	47% increased risk for preterm birth $p < 0.001$ 59% increased risk for very preterm birth $p < 0.001$	Data was obtained from the Scottish Morbidity Records on both abortion and maternity records for the period between 1981 and 2007. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes. Other comments: Results show a dose-response relationship for the outcome of preterm birth.	120,033 women who had an induced abortion in their first pregnancy	457,477 women who had a live birth for their first pregnancy	• Maternal age • Year of delivery • Interpregnancy interval
	Two previous induced abortions	51% increased risk for preterm birth $p < 0.001$ 34% increased risk for very preterm birth $p = 0.056$				
	Three previous induced abortions	52% increased risk for preterm birth $p = 0.008$ 64% increased risk for very preterm birth $p = 0.16$				
	Four previous induced abortions	110% increased risk for preterm birth $p < 0.001$ 327% increased risk for very preterm birth $p < 0.001$				

"Intracervical procedures and the risk of subsequent very preterm birth: a case control study" L. F. Watson J. A. Rayner J. King D. Jolley D. Forster February 2012 *ACTA Obstetricia et Gynecologica Scandinavica* Vol.91 no.2 pp.204-210	Previous abortion involving curettage	51% increased odds of very preterm birth p = 0.007	Women were selected from among those having a single birth in Victoria, Australia, between April 2002 and March 2004. Data was collected via interview and questionnaire, and included social and demographic factors, maternal characteristics, reproductive history, history of intracervical procedures and pregnancy outcomes. Most of the test group came from three main tertiary hospitals in Victoria. Other comments: No distinction was made between spontaneous and induced abortion.	603 women with a single very preterm birth (between 20 and 32 weeks gestation)	796 women with a single term birth	• Parity • Prior preterm birth • Ethnicity • Marital status • Smoking status • Alcohol consumption • Other intracervical procedures
"First-trimester bleeding characteristics associate with increased risk of preterm birth: data from a prospective pregnancy cohort" D. R. Velez Edwards D. D. Baird R. Hasan D. A. Savitz K. E. Hartmann January 2012 *Human Reproduction* Vol.27 no.1 pp.54-60	One or more previous induced abortions	18% increased risk of preterm birth	Subjects were recruited through the Right From The Start (RFTS) study in Texas, Tennessee, and North Carolina between 2000 and 2009. Information was collected from medical records and via interview and examination. Information included social and demographic factors, maternal characteristics, reproductive history, pregnancy events and pregnancy outcomes.	344 women with a preterm birth	3,634 women with term birth	None
"Maternal risk factors for preterm birth: a country-based population analysis" G. C. Di Renzo I. Giardina A. Rosati G. Clerici M. Torricelli F. Petraglia Italian Preterm Network Study Group December 2011 *European Journal of*	One or more previous abortions	95% increased odds of spontaneous preterm birth p = 0.01	Data was taken from medical records for women who had spontaneous term and preterm births between April and December 2008 in nine different Italian maternity hospitals. Information collected included social and demographic factors, maternal characteristics, reproductive history, maternal medical conditions and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.	338 women with a single spontaneous preterm birth	7296 women with a single term birth	• Age • Employment • BMI • Smoking status • Diabetes • Hypertension • Asthma • Endocrinological disease[12] • Uterine malformations • Previous abortion • Previous preterm birth • Previous cesarean section • Interpregnancy interval < 1 year

[12] Imbalance in hormone levels

Obstetrics & Gynaecology and Reproductive Biology Vol.159 no.2 pp.342-346						• IVF • Aminocentesis/ villocentesis
"The association between parity, infant gender, higher level of paternal education and preterm birth in Pakistan: a cohort study" K. Shaikh S. S. Premii M. S. Rose A. Kazi S. Kowaia S. Tough November 2011 *BMC Pregnancy and Childbirth* Vol.11 no.88 doi:10.1186/1471-2393-11-88	Previous abortion	224% increased odds of preterm birth $p = 0.198$	Subjects were selected from pregnant women between 28 and 30 weeks of gestation attending the Khan Hospital for Women and Children, Kharadar and Karimabad Karachi, Pakistan. Information was collected via stress and depression data collection tools, and blood sampling. Information collected included social and demographic factors, maternal characteristics, reproductive history, blood sampling results and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.	15 women with a preterm birth	117 women with a term birth	None
"Repeated medical abortions and the risk of preterm birth in the subsequent pregnancy" H. Liao Q. Wei L. Duan J. Ge Y. Zhou W. Zeng September 2011 *Archives of Gynaecology and Obstetrics* Vol.284 no.3 pp.579-586	Previous medical abortion	40% increased odds of preterm birth $p < 0.001$	Subjects were recruited from seven public hospitals in China in the period from January 2006 to December 2009. Subjects were enrolled prior to 20 weeks gestation and followed until six weeks post birth. Data on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes was collected via questionnaire and from clinical records. Other comments: Results show a dose-response relationship.	7,478 women with a history of induced abortion	10,546 women with a single pregnancy and no history of induced abortion	• Maternal age • Education • Residence • Occupational status

"Biopsychosocial risk factors for preterm birth and postpartum emotional well-being: a case-control study on Turkish women without chronic illnesses" I. Gungor U. Oskay N. K. Beji March 2011 *Journal of Clinical Nursing* Vol.20 no.5-6 pp.653-665	When compared with a control group, women with a preterm delivery were 41% more likely to have had one or more previous abortions p = 0.216		Subjects were recruited from a postpartum ward in Istanbul University Istanbul Faculty of Medicine from October 2005 to October 2006. One control who delivered the same day was recruited for each case subject. Data was collected via interview and questionnaire and included social and demographic factors, maternal characteristics, reproductive history, history of current pregnancy and pregnancy outcomes.	149 women with a preterm delivery	150 women with a term delivery	Control group and study group were significantly different in the following factors: • Maternal and paternal education • Maternal and paternal employment • Economic status • Insurance status • Family type • History of preterm birth • History of previous complicated pregnancy • History of low birth weight infant • Previous stillbirths
"Modelling sequence of prior pregnancies on subsequent risk of very preterm birth" L. F. Watson J. A. Rayner J. King D. Jolley D. Forster J. Lumley September 2010 *Paediatric and Perinatal Epidemiology* Vol.24 no.5 pp.416-423	First non-aborted pregnancy after previous induced abortion	151% increased odds of preterm birth p < 0.001	Subjects were recruited from 73 Victorian hospitals between April 2002 and March 2004. Data was collected via face-to-face or telephone interview, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. The control group was selected to be representative of the population. Other comments: Spontaneous and induced abortions were combined into a single category due to the authors having found no significant difference in outcomes between them.	603 women with a single preterm birth	796 women with a single term birth	• Maternal age • Education • Country of birth • Income • Marital status • Pre-pregnancy BMI • Smoking status • Alcohol consumption • Inter-pregnancy interval
	Second or more non-aborted pregnancy after previous induced abortion	76% increased odds of preterm birth p = 0.007				
"Analysis of preterm deliveries below 35 weeks' gestation in a tertiary referral hospital in the UK. A case-control survey" W. Yuan A. M.Duffner L. Chen L. P. Hung S. M. Sllers A. L. Bernal April 2010	Previous abortion at less than 20 weeks gestation	51% increased risk of preterm delivery prior to 35 weeks gestation p = 0.007	Study and control groups were taken from women who delivered at St Michael's Hospital, Bristol, in 2002 and 2003. Information collected from hospital databases and medical records, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes.	274 women with a preterm delivery between 23 and 35 weeks gestation	559 women with a term delivery	• Ethnicity • Maternal age • Multiple gestations • BMI • Socioeconomic status • Social problems • Smoking status • Alcohol use during pregnancy • Drug use during pregnancy • Parity • Previous preterm delivery • Previous termination

BMC Research Notes Vol.3 no.119 doi:10.1186/1756-0500-3-119						• Previous spontaneous miscarriage • Medical disorders
"Association of very high Hungarian rate of preterm births with cervical incompetence in pregnant women" F. Banhidy N. Acs E. H. Puho A. E. Czeizel March 2010 *Central European Journal of Public Health* Vol.18 no.1 pp.8-15	Cervical incompetence in pregnancy	30% increased odds of preterm birth $p < 0.001$	Cases of newborn infants were selected collected from the National Birth Registry of the Central Statistical Office for the Hungarian Case-Control Surveillance System of Congenital Abnormalities. Infants were born between 1980 and 1996 and had served as the controls (*i.e.* no congenital abnormalities) for infants born with congenital abnormalities. Information was collected from prenatal care logbooks, medical records, questionnaires and home visits, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes. Other comments: While this study does not specifically explore a link between induced abortion and preterm birth, the authors explicitly state their surmise that the frequency of cervical incompetence in pregnancy is due to the high rate of induced abortion performed by dilation and curettage.	2,795 women with cervical incompetence in pregnancy	35,356 women without cervical incompetence in pregnancy	Women with cervical incompetence in pregnancy were more like to be older, be of a higher parity and have a higher socioeconomic status. Other parameters considered did not differ significantly between the two groups.
"Predicting adverse obstetric outcome after early pregnancy events and complications: a review" R. H. F. van Oppenraaij E. Jauniaux O. B. Christiansen J. A. Horcajadas R. G. Farquharson N. Exalto July-August 2009 *Human Reproduction Update* Vol.15 no.4 pp.409-421	One previous induced abortion	20% increased odds of preterm birth $p < 0.001$ 50% increased odds of very preterm birth (prior to 34 weeks) $p = 0.008$	Literature review of studies published between 1980 and 2008, looking at the association between first trimester pregnancy complications and their impact on subsequent pregnancy outcomes. Other comments: Results show a dose-response relationship.	N/A	N/A	N/A
	Two or more previous induced abortions	90% increased odds of preterm birth $p = 0.002$ 160% increased odds of very preterm birth (prior to 34				

		weeks) p = 0.026				
"Is induced abortion with misoprostol a risk factor for late abortion or preterm delivery in subsequent pregnancies?" N. Winer M. Resche-Rigon C. Morin Y. Ville P. Rozenberg July 2009 *European Journal of Obstetrics & Gynaecology and Reproductive Biology* Vol.145 no.1 pp.53-56	Previous induced abortion with misoprostol	33% increased odds of late spontaneous abortion or preterm birth p = 0.25	Women for the test group were selected after undergoing preterm birth or late spontaneous abortion (miscarriage). The controls were two other women who gave birth at full term after each time there was a preterm birth. All women delivered at the Poissy-Saint Germain Hospital, and data was collected post-partum through interviews and from medical records. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	245 women who delivered between 16 and 36 weeks gestation	490 women who delivered at term.	• Maternal age • Number of pregnancies Controls matched in: • Maternal age • Parity • Number of pregnancies • Smoking status • History of first trimester miscarriage
"Induced termination of pregnancy and low birthweight and preterm birth: a systematic review and meta-analyses" P. S. Shah J. Zao May 2009 *BJOG: An International Journal of Obstetrics and Gynaecology* Vol.116 no.11 pp.1425-1442	One previous induced abortion	36% increased odds of preterm birth p < 0.001	Statistical analysis of 37 observational studies on the association between induced abortion and the outcomes of subsequent preterm birth, low infant birthweight and small for gestational age infants. Other comments: Results show a dose-response relationship.	N/A	N/A	Controlled variables varied between studies analysed; figures reported here were drawn from the adjusted data, which took into account variables such as parity, maternal age, marital status, smoking, socioeconomic status, *etc*. in some studies, while other studies did not control for variables.
	More than one previous induced abortions	93% increased odds of preterm birth p < 0.001				
"History of pregnancy termination as a risk factor for preterm birth, Virginia 2000-2007" J. O. MacDonald May 2009 *Department of Epidemiology and Public*	One previous induced abortion	10% increased odds of preterm birth p = 0.02	Data was collected from the Virginia live birth and fetal death record for all first single live births between 2000 and 2007. The records include information on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	56,438 women with a history of one or more induced abortions	286,681 women with no history of induced abortion	• Maternal age • Race • Education • Infant gender • Smoking status • Alcohol consumption • Drug use • Prenatal care • Method of payment • History of diabetes
	Two previous induced abortions	20% increased odds of preterm birth p < 0.001				

Health: Master of Public Health Program Virginia Commonwealth University, Richmond, Virginia http://hdl.handle.net/10156/2432	Three or more previous induced abortions	40% increased odds of preterm birth p < 0.001				• History of hypertension • Pregnancy induced hypertension • Incompetent cervix
"Outcomes for subsequent pregnancy in women who have undergone misoprostol mid-trimester termination of pregnancy" V. Mirmilstein S. Rowlands J. F. King April 2009 *The Australian and New Zealand Journal of Obstetrics and Gynaecology* Vol.49 no.2 pp.195-197	Previous mid-trimester misoprostol induced abortion	150% increased risk for preterm birth p = 0.29	Women who had a mid-trimester induced abortion via misoprostol between 1998 and 2003 at a Melbourne (Victoria, Australia) hospital were identified from medical records and hospital obstetric databases. Those who then had a subsequent pregnancy were identified from the same records, and pregnancy outcomes were obtained. Other comments: Only the outcome of the first pregnancy post-induced abortion was included in the study.	77 women with previous mid-trimester misoprostol induced abortions Multiple pregnancies and fetal anomalies were excluded	77 women of a similar age with no history of previous mid-trimester misoprostol induced abortion who delivered at the same hospital Multiple pregnancies and fetal anomalies were excluded	There were no significant differences between the test and control group for the following factors: • Maternal age • Previous preterm birth • Parity
"Is Induced Abortion a Risk Factor in Subsequent Pregnancy?" M. Voigt W. Henrich M. Zygmunt K. Friese S. Straube V. Briese March 2009 *Journal of Perinatal Medicine* Vol.37 no.2 pp.144-149	One previous induced abortion	20% increased risk of preterm birth p = 0.015	Data was taken from eight German state databases for the period 1998-2000. Information collected included maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	247,593 women pregnant for the first time		Controls matched for: • Maternal age • Parity Summary states that analysis was adjusted for confounding variables.
	Two or more previous induced abortions	31% increased risk of preterm birth p = 0.015		Women aged 28-30 with a history of induced abortion.	Women aged 28-30 with no history of induced abortion.	
"Abortion and the risk of subsequent preterm birth: a systematic review with meta-analyses" H. M. Swingle T. T. Colaizy	One or more previous induced abortions	32% increased odds of preterm birth p < 0.001	Statistical analysis of 21 studies on the association between induced or spontaneous abortion and subsequent preterm birth; 12 studies were on induced abortion.	N/A	N/A	The figures cited here were taken from the adjusted data, which took into account variables such as age, parity, race and smoking status *etc.*;

M. B. Zimmerman F. H. Morriss, Jr February 2009 *The Journal of Reproductive Medicine* Vol.54 no.2 pp.95-108						however, these variables varied between studies included in the analysis.
"Previous abortion and risk of pre-term birth: a population study" R. Freak-Poli A. Chan G. Tucker J. Street January 2009 *The Journal of Maternal-Fetal and Neonatal Medicine* Vol.22 no.1 pp.1-7	One or more previous induced abortions	25% increased odds of spontaneous or induced preterm birth $p < 0.001$ 37% increased odds of spontaneous preterm birth $p < 0.001$	Analysis of government collected data on pregnancy outcomes in South Australia between 1998 and 2003. Information collected included social and demographic factors, maternal characteristics, reproductive history, maternal and fetal conditions and pregnancy outcomes. Pregnancy outcomes analysed included single preterm births (spontaneous and induced), single term births and spontaneous preterm births. All women were bringing a child to birth for the first time. Other comments: Results show a dose-response relationship.	3,078 women with a single preterm birth (both induced and spontaneous); of these, 1,803 women with a single spontaneous preterm birth	39,191 women with a single term birth (both induced and spontaneous); of these, 23,753 women with a single spontaneous term birth	• Maternal age • Indigenous Australian status • Marital status • Maternal smoking status • Assisted reproductive technology status • Socioeconomic status • Obstetric complications
"Risk factors associated with preterm birth according to gestational age at birth" B. D. Ofori M. Le Tiec A. Berard June 2008 *Pharmacoepidemiology and Drug Safety* Vol.17 no.6 pp.556-564	Abortion or miscarriage in previous twelve months	15% increased odds of preterm birth $p = 0.077$ 50% increased odds of extremely preterm birth (prior to 28 weeks gestation) $p = 0.15$	Data on women in Quebec was collected from three databases: Economy of Health Insurance, Quebec; Med Echo; and the Birth and Death Registries of the Institute of Statistics, Quebec. Information collected included social and demographic factors, maternal characteristics, reproductive history, medical services and medication used during pregnancy and pregnancy outcomes.	3,906 women with a preterm birth 698 women with a very preterm birth 243 women with an extremely preterm birth (prior to 28 weeks gestation)	65,360 women with a term birth	• Maternal age • Socioeconomic status • Education • Interpregnancy interval • Abortion or miscarriage in previous year • Infant gender • Placenta previa[13] • Placental abruption[14] • Uterine abnormalities • Intestinal infection • Polyhydramnios • Gestational diabetes • Gestational hypertension and pre-eclampsia • Depression • HIV • Thyroid disorders • Diabetes • Hypertensive disease • Number of different prescribers seen in 12 months prior to

[13] Condition in which the placenta is too close to the cervix, which can lead to bleeding and prevent normal delivery
[14] Condition in which the placenta comes away from the uterus, causing bleeding and problems with the oxygen supply to the fetus

						pregnancy • Number of medications before pregnancy • Number of medical visits before pregnancy • Prenatal visits • Obstetrician/ gynaecologist visits • Visit to hospital or emergency department before or during pregnancy
"Ethnic differences in preterm birth and its subtypes: the effect of a cumulative risk profile" G. Goedhart M. van Eijsden M. F. van der Wal G. J. Bonsel May 2008 *BJOG: An International Journal of Obstetrics and Gynaecology*	Previous abortion	30% increased risk of preterm birth p = 0.03	Data was taken from the Amsterdam Born Children and Their Development (ABCD) study, which collected information on pregnant women attending their first antenatal appointment between January 2003 and March 2004. Information was collected via questionnaire and from the Youth Health Care Registration at the Municipal Health Service and the Dutch Perinatal Registration (PRN). Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	417 women with a single preterm birth	7,187 women with a single term birth	• Ethnicity • Maternal age • Parity • BMI • Education • Marital status • Smoking status • Alcohol use • Depressive symptoms • Heavy work • Previous preterm birth • Previous miscarriage/stillbirth • Previous abortion • Hypertensive disorder • Vaginal douching • Excessive vaginal discharge • Vaginal itching
"Cervical length for prediction of preterm birth in women with multiple prior induced abortions" J. Vistinine V. Berghella D. Henning J. Baxter February 2008 *Ultrasound in Obstetrics and Gynecology* Vol.31 no.2 pp.198-200	More than one induced abortion and cervical length less than 25mm	47% risk of delivery prior to 35 weeks compared to an general risk of 18% for women with a cervical length less than 25mm	Women with a history of more than one induced abortion and a single fetus who presented at Thomas Jefferson University Hospital from 1995 were identified retrospectively. Data was drawn from the Thomas Jefferson University Hospital Prematurity Database, which followed women with suspected risk factors for preterm delivery and included cervical length measurements. Other comments: The study excluded women with medically indicated preterm delivery. The statistic of 18% is a positive predictive value drawn from a 1996 paper examining the relationship between cervical length and	65 women with a history of more than one induced abortion, 15 of whom had a cervical length less than 25mm	N/A	The demographic and risk factors were similar for all women assessed in the study

			spontaneous preterm delivery: Iams *et al.* (1996) "The length of the cervix and the risk of spontaneous preterm delivery" *New England Journal of Medicine* Vol.334 no.9 pp.567-572			
"Previous abortion and the risk of low birth weights and preterm birth" J. S. Brown, Jr T. Adera S. W. Masho January 2008 *Journal of Epidemiology & Community Health* Vol.62 no.1 pp.16-22	One previous abortion	67% increased odds of preterm birth $p < 0.001$	Data was taken from the United States Collaborative Perinatal Project, which collected data on over 55,000 pregnancies between 1959 and 1966. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion. Results show a dose-response relationship.	6,105 women with one previous abortion 1,813 women with two previous abortions 978 women with three or more previous abortions	44,308 women with no previous abortion	• Race • Age • Marital status • Education status • Parity • Smoking • Alcohol and drug dependence • Gestational hypertension • Gestational diabetes • BMI • Pregnancy weight gain • Prenatal visits • Hemoglobin • Infant gender • Birth location
	Two previous abortions	103% increased odds of preterm birth $p < 0.001$				
	Three or more previous abortions	203% increased odds of preterm birth $p < 0.001$				
"Reproductive outcomes in adolescents who had a previous birth or an induced abortion compared to adolescents' first pregnancies" B. Reime B. A. Schucking P. Wenzlaff January 2008 *BMC Pregnancy and Childbirth* Vol.8 no.4 doi: 10.1186/1471-2393-8-4	Previous induced abortion	90% increased odds of preterm birth $p = 0.16$	Data drawn from surveys (the Perinatal Surveys) carried out in Lower Saxony, Germany, between 1990 and 1999. Data was collected on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Data collection is restricted to hospital births, and includes outcomes for all livebirths and stillborn infants > 499 grams. Other comments: While the crude odds ratio showed significance, the adjusted odds ratio quoted here (taking into account the listed potential confounding factors) did not. The authors suggest that under-reporting may have occurred.	801 adolescents with one previous livebirth or stillbirth 211 adolescents with one previous induced abortion	7,845 adolescents with first-time pregnancies	• Nationality • Marital status • Smoking status • Prenatal care • BMI

"Risk factors for spontaneous preterm delivery before 34 weeks of gestation among Taiwanese women" C. C. Lo J. J. Hsu C. C. Hsieh T. T. Hsieh T. H. Hung December 2007 *Taiwanese Journal of Obstetrics and Gynaecology* Vol.46 no.4 pp.389-394	Three or more previous induced abortions	71% increased risk of preterm birth $p < 0.01$	Data was collected from the obstetric database for Chang Gung Memorial Hospital for deliveries after 20 weeks gestation between July 1990 and December 2003. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes. Multiple gestations and fetal anomalies were excluded. Other comments: Results show a dose-response relationship.	505 women with a single preterm delivery	35,948 women with a single term delivery	• Maternal age • Education • Pre-pregnancy BMI • Marital status • Employment • Use of assisted reproductive technology • Infant gender • Pregnancy complications and procedures • Previous fetal loss • Previous preterm delivery • Previous cesarean section • Previous induced abortion • Gestational diabetes • Uterine malformations
"Mid-trimester dilation and evacuation with laminaria does not increase the risk for severe subsequent pregnancy complications" J. E. Jackson W. A. Grobman E. Haney H. Casele January 2007 *International Journal of Gynecology and Obstetrics* Vol.96 no.1 pp.12-15	Previous mid-trimester D & E	324% increased risk of preterm birth $p = 0.03$	The test group were chosen by searching medical records for terminations and subsequent pregnancy and birth at one of two hospitals. The control group were chosen by searching medical records for deliveries at the same hospitals. Information collected included maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Only first pregnancy post-abortion was considered. Clinically significant "severe subsequent pregnancy complications" were defined as pre-term birth <34 weeks.	85 pregnant women with previous mid-trimester D & E terminations Only women with single pregnancies and no fetal anomalies were included	170 pregnant women without previous mid-trimester termination Only women with single pregnancies and no fetal anomalies were included	• Maternal age • Parity • Prior pre-term birth • Prior 2nd trimester birth • Prior cervical surgery
"Precancerous changes in the cervix and risk of subsequent preterm birth" F. Bruinsma J. Lumley J. Tan	One previous induced abortion	49% increased odds of preterm birth $p = 0.0004$	Subjects were selected from those presenting to the Cervical Dysplasia Clinic at the Royal Women's Hospital, Victoria, Australia, between 1982 and 2000. Data was taken from computerised medical records and the Victorian Perinatal Data Collection Unit, and included social and demographic factors, maternal	533 women with a preterm birth	4,876 women with a term birth	• Treatment type

M. Quinn January 2007 *BJOG: An International Journal of Obstetrics and Gynaecology* Vol.114 no.1 pp.70-80	Two or more previous induced abortions	68% increased odds of preterm birth p = 0.0006	characteristics, reproductive history, medical treatment during pregnancy and pregnancy outcomes. Other comments: Results show a dose-response relationship.			
"Mid-pregnancy maternal plasma levels of interleukin 2, 6, and 12, tumor necrosis factor-alpha, interferon-gamma, and granulocyte-macrophage colony-stimulating factor and spontaneous preterm delivery" A. E. Curry J. Vogel C. Drews D. Schendel K. Skogstrand W. D. Flanders D. Hougaard J. Olsen P. Thorsen 2007 *Acta Obstetricia et Gynecologica Scandinavica* Vol.86 no.9 pp.1103-1110	One or more previous induced abortions	47% increased risk of spontaneous preterm birth between 24 and 29 weeks gestation p = 0.01 33% increased risk of spontaneous preterm birth between 30 and 33 weeks p = 0.07 42% increased risk of spontaneous preterm birth between 34 and 36 weeks gestation p = 0.02	Data was taken from the Danish National Birth Cohort study for the period between 1997 and 2002. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	61 women with a spontaneous preterm birth between 24 and 29 weeks gestation 278 women with a spontaneous preterm birth between 30 and 33 weeks 334 women with a spontaneous preterm birth between 34 and 36 weeks gestation	1,125 women with a single term birth	None

"Perinatal outcomes in women with a history of therapeutic abortions" R. Ruskin J. Steinauer T. Tan S. Wilson A. Caughey December 2006 *American Journal of Obstetrics and Gynaecology* Vol.195 no.6 (supp.) pp.S205	Three previous induced abortions	27% increased odds of preterm birth p = 0.02	Data was collected on obstetric history and pregnancy outcomes on women delivering at one teaching hospital. Other comments: Information on study drawn from a journal supplement, and hence some detail is lacking. Results show a dose-response relationship.	32,171 pregnant women		• Obstetric history • Demographic factors • Medical history
	Four previous induced abortions	54% increased odds of preterm birth p < 0.001				
"Maternal and biochemical predictors of spontaneous preterm birth among nulliparous women: a systematic analysis in relation to the degree of prematurity" G. C. Smith I. Shah I. R. White J. P. Pell J. A. Crossley R. Dobbie October 2006 *International Journal of Epidemiology* Vol.35 no.5 pp.1169-1177	One previous induced abortion	19% increased odds of preterm birth p = 0.004	Data was collected from the Scottish Morbidity Record and the database maintained for the West of Scotland prenatal screening program by the Institute of Medical Genetics in Glasgow. Data was collected for first births between 1992 and 2001, and included information on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes and biochemical screening results. Other comments: Results show a dose-response relationship.	4,150 women with a single preterm birth 1,125 women with a single very preterm birth	79,116 women with single term birth	• Alpha-fetoprotein results[15] • hCG results[16] • Maternal age • Marital status • Smoking status • Height • BMI • Previous miscarriages • Previous therapeutic abortions • Socioeconomic status
	Two or more previous induced abortions	90% increased odds of preterm birth p < 0.001				
"Maternal antenatal profile and immediate neonatal outcome in VLBW and ELBW babies" K. K. Roy J. Baruah S. Kumar N. Malhotra A. K. Deorari J. B. Sharma	A history of abortion was a common association with preterm birth (prior to 34 weeks)		Subjects were chosen from those who had a preterm delivery prior to 34 weeks at the All India Institute of Medical Sciences, New Delhi, between January 2001 and January 2005. Information was collected from case records, and included social and demographic factors, reproductive history and pregnancy and neonatal outcomes. Other comments: No stated distinction was made between	92 women with a preterm birth at or prior to 34 weeks	N/A	N/A This study was a review of the risk factors present in women with a preterm birth rather than an exploration of the statistical association between specific risk factors and preterm birth.

[15] Measures a protein found in the blood; high levels can mean that the foetus has a developmental problem, such as a neural tube defect
[16] Measures a hormone produced by the embryo, used to test for pregnancy

August 2006 *Indian Journal of Paediatrics* Vol.73 no.8 pp.669-673			spontaneous and induced abortion.			
"Impact of infertility characteristics and treatment modalities on singleton pregnancies after assisted reproduction" P. Poikkeus L. Unkila-Kallio S. Vilska L. Repokari R. L. Punamaki A. Aitokallio-Tallberg J. Sinkkonen F. Almgvist M. Tulppala A. Tiitinen July 2006 *Reproductive Medicine Online* Vol.13 no.1 pp.135-144	Previous induced abortion	350% increased odds of preterm birth p = 0.03	Subjects were recruited from couples undergoing assisted reproduction therapy at Helsinki University Central Hospital, the Family Federation of Finland (Helsinki, Oulu and Turku) and the Deaconess Institute (Helsinki) in 1999. The control group was selected from couples undergoing a 16-18 week scan at Helsinki University Central Hospital during the same time period. Data was collected from medical records and via questionnaire, and included social and demographic factors, reproductive history and pregnancy outcomes.	396 women pregnant through assisted reproduction technology	319 women pregnant through spontaneous conception	• BMI • Previous miscarriage • Previous induced abortion • Previous ectopic pregnancy • Nulliparity • Aetiology of infertility (male, female, both or unknown) • Duration of infertility • Number of treatments • Treatment type
"Risk factors for pre-term birth in Iraq: a case-control study" S. A. Al-Dabbagh W. Y. Al-Taee April 2006 *BMC Pregnancy and Childbirth* Vol.6 no.13 doi:10.1186/1471-2393-6-13	Previous abortion	536% increased odds of preterm birth p < 0.001	Subjects were recruited from the three main hospitals in Mosul, Iraq. The control group was selected from women delivering at the same hospitals. Data was collected from medical records and via face-to-face interviews, and included social and demographic factors, reproductive history, emotional disturbance during pregnancy and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.	200 women with a live preterm birth	200 women with a live full-term birth	• Anxiety • Meat consumption • Presence of and caring for a domestic animal • Manual work • Urinary tract infection • Direct trauma to the abdomen • Abortion • Cervical incompetence • Multiple gestation There was no significant difference in history of abortion between the study group and the control group

"Risk factors for previable premature rupture of membranes or advanced cervical dilation: a case control study" S. J. Kilpatrick R. Patil J. Connell J. Nichols L. Studee April 2006 *American Journal of Obstetrics and Gynaecology* Vol.194 no.4 pp.1168-1175	Previous miscarriage or abortion at less than 20 weeks gestation	80% increased odds of premature rupture of membranes p = 0.02	Data was collected on a group inner-city women between January 1996 and December 2000. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. The test group was defined as women with preterm rupture of membranes or advances cervical dilation, while the control group was created using the two term deliveries subsequent to each test case. Other comments: No stated distinction was made between spontaneous and induced abortion. Other findings included 280% increased odds of advanced cervical dilation with a history of miscarriage or abortion at less than 20 weeks gestation.	102 women with premature rupture of membranes 56 women with advanced cervical dilation All women were carrying single pregnancies	316 women with single term deliveries	• Maternal age • Marital status • Parity • Race • 2nd trimester preterm delivery • Current cervical incompetence • Cervical cerclage[17] before admission • Previous premature rupture of membranes • History of cervical incompetence • Smoking status • Miscarriage or abortion < 20 weeks gestation • 3rd trimester preterm delivery • Previous cesarean section • Fibroids or polyps • Current bacterial vaginosis • History of *Chlamydia*
"Factors Influencing the Incidence of Pre-term Birth in Calabar, Nigeria" S. J. Etuk J. S. Etuk A. E. Ovo-Ita June-December 2005 *Nigerian Journal of Physiological Science* Vol.20 no.1-2 pp. 63-68	One or more previous induced abortion	53% increased risk of preterm birth p < 0.0001	Women with a preterm delivery between January 1996 and June 1999 were selected from the delivery registers of the University of Calabar Teaching Hospital, Calabar. The term delivery subsequent to each preterm delivery was added to the control group. Data was collected from case notes and included social and demographic factors, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	217 women with a preterm birth	217 women with a term birth	In social and demographic factors, the control group was significantly different from the study group only in marital status
	At least two previous induced abortions	76% increased risk of preterm birth p < 0.01				

[17] Procedure in which a removable stitch is placed in the cervix to keep it closed

"Induced Abortion Increases the Risk of Very Preterm Delivery: Results From a Large Perinatal Database" P. Stang A. O. Hammoud P. Baumann September 2005 *Fertility and Sterility* Vol.84 Suppl.1 pp.S159	Previous induced abortion	55% increased odds of very preterm birth p = 0.03	Data was collected from 29 delivery units in the State of Schleswig-Holstein, Germany, for deliveries between 1991 and 1997. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	4,572 women with very preterm single births	60,284 women with single births post-28 weeks gestation	Study group median age was greater than controls, but authors do not state whether this is significant or whether any other differences were present.
"Maternal smoking and causes of very preterm birth" N. B. Kyrklund-Blomberg F. Granath S. Cnattingius June 2005 *Acta Obstetricia et Gynecologica Scandina vica* Vol.84 no.6 pp.572-577	One or more previous induced abortion	40% increased odds of very preterm birth p = 0.057	Data was collected from delivery registers and antenatal and obstetric records at two Stockholm hospitals for the period between 1988 and 1992. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. The control group consisted of the first term birth registered after each preterm birth from the test group.	295 women with a single very preterm birth	295 women with a single term birth	None
"Maté drinking during pregnancy and risk of preterm and small for gestational age birth" I. S. Santos A. Matijasevich N. C. Valle May 2005 *The Journal of Nutrition* Vol.135 no.5 pp.1120-1123	Preterm birth was 210% more prevalent in women with a past history of abortion compared to women without a previous abortion p = 0.003		Subjects were selected from patients of the five maternity hospitals of Pelotas, Southern Brazil, in 1993. Information was collected via questionnaire, interview and examination, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.	N/A	5,189 births (including 21 late fetal deaths)	• Education status of mother and partner • Economic status • Ethnicity • Previous fetal death • Smoking status
"Previous induced abortion and the risk of very preterm delivery: results of the EPIPAGE study" C. Moreau M. Kaminski P. Y. Ancel	One previous induced abortion	30% increased odds of very preterm birth p = 0.08	A test group of women giving birth in maternity wards across nine French regions (approximately one third of the births in France) were enrolled and data collected from interviews and medical records. Control groups from the same regions and maternity units were selected at random. Information collected included social and demographic factors,	1,943 women with single very preterm births (between 22 and 32 weeks)	618 women with single term births 276 women with single preterm births (between 33 and 34 weeks)	• Maternal age • Parity • Previous preterm birth • Marital status • Education level • Employment status • Weight before pregnancy

J. Bouyer B. Escande G. Thiriez P. Boulot J. Fresson C. Arnaud D. Subtil L. Marpeau J. Roze F. Maillard B. Larroque EPIPAGE Group April 2005 *BJOG: An International Journal of Obstetrics and Gynaecology* Vol.112 no.4 pp.430-437	More than one previous induced abortions	160% increased odds of very preterm birth p = 0.03	maternal characteristics, reproductive history, maternal medical conditions and pregnancy outcomes. Other comments: Results show a dose-response relationship.			• Smoking status
	Overall (one or more previous induced abortions)	50% increased odds of very preterm birth p = 0.008				
"The epidemiology of threatened preterm labor: a prospective cohort study" M. L. McPheeters W. C. Miller K. E. Hartmann D. A. Savitz J. S. Kaufman J. M. Garrett J. M. Thorp April 2005 *American Journal of Obstetrics and Gynaecology* Vol.192 no.4 pp.1325-1329	Previous abortion	30% increased odds of diagnosis of preterm labour p = 0.14	Data was taken from the Pregnancy, Infection and Nutrition (PIN) study, which included information on social and demographic factors, genital tract infections, nutrition, substance use, psychosocial stress and physical exertion, and was collected via interview. Medical records were used to obtain data for pregnancy outcomes.	234 women with single pregnancies who were hospitalized for preterm labour	2,300 women with single pregnancies without hospitalization for preterm labour	• Marital status • Race • Education • Health cover • Smoking status • Alcohol consumption • Drug use • Maternal age • Sexually transmitted infection • Bacterial vaginosis • Urinary tract infection • Bleeding • Previous miscarriage • Previous abortion • Previous stillbirth • Previous preterm birth • Previous ectopic pregnancy • Previous live birth
"Effect of the interpregnancy interval after an abortion on maternal and perinatal health in Latin America" A. Conde-Agudelo J. M. Belizan	Interpregnancy interval of 0-2 months after abortion	160% increased of preterm or very preterm birth compared to reference group p < 0.001	Data was taken from the Perinatal Information System database located at the Latin American Center for Perinatology and Human Development (CLAP) in Montevideo, Uruguay for the period between 1985 and 2002. Information collected included social and demographic factors, maternal characteristics,	227,909 women with a history of abortion and an interpregnancy interval ranging from 0 to greater than 60 months,	30,199 women with a history of abortion and an interpregnancy interval of 18-23 months	• Maternal age • Parity • Education • Marital status • Smoking status • Weight gain during pregnancy

R. Breman S. C. Brockman A. Roasa-Bermudez April 2005 *International Journal of Gynaecology and Obstetrics* Vol.89 Suppl. 1 pp.S34-40	Interpregnancy interval of 3-5 months after abortion	120% increased odds of preterm of very preterm birth compared to reference group p < 0.001	reproductive history and pregnancy and neonatal outcomes. Other comments: Interpregnancy interval is the time from abortion to conception of next pregnancy. No stated distinction was made between spontaneous and induced abortion. While a short interpregnancy interval showed increased odds of preterm birth, a long interpregnancy interval did decrease the odds compared to the reference (control) group.	but excluding 18-23 months		• History of low birth weight • History of perinatal death • Chronic hypertension • Antenatal care (including gestational age at first visit) • Geographic area • Hospital type • Year of delivery
	Interpregnancy interval of 6-11 months after abortion	10% increased odds of preterm birth compared to reference group p < 0.001 20% increased odds of very preterm birth compared to reference group p = 0.006				
"Prediction of preterm delivery in the second trimester" M. H. De Carvalho R. E. Bittar L. Brizot Mde C. Bicudo M. Zugaib March 2005 *Obstetrics and Gynaecology* Vol.105 no.3 pp.532-536	Previous curettage	54% increased risk of delivery prior to 34 weeks p = 0.116	Subjects were recruited from women attending an antenatal clinic in the obstetric department of Sa˜o Paulo University from January 1998 to June 2001. Data was taken from a fetal ultrasound database, hospital records and from subjects via telephone. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	66 women with a birth prior to 34 weeks gestation	1,892 women with a birth after 34 weeks gestation	• Maternal age • Ethnicity • History of preterm delivery • History of miscarriage • History of curettage
"Large social disparities in spontaneous preterm birth rates in transitional Russia" A. M. Grjibovski L. O. Bygren A. Yngve M. Siostrom February 2005 *Public Health* Vol.119 no.2 pp.77-86	Two or more previous induced abortions	49% increased odds of preterm birth p = 0.2	Data was collected on all pregnant women registered in prenatal care centers in 1998 in the town of Severodvinsk. Information was obtained via medical records and a questionnaire, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	62 spontaneous preterm births	1,041 spontaneous preterm births	None

"Incidence and risk factors for preterm delivery in a tertiary health institution in Nigeria" O. U. J. Umeora A. B. A. Ande S. O. Onuh P. O. Okubor J. O. Mbazor November 2004 *Journal of Obstetrics and Gynaecology* Vol.24 no.8 pp.895-896	Previous 2nd trimester induced abortion	89% increased odds of preterm birth $p < 0.05$	The study group was recruited from women with preterm deliveries at the Obstetric Unit of the University of Benin Teaching Hospital, Benin City, Nigeria, between July 2001 and June 2002. Data was collected on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	87 women with spontaneous preterm delivery	174 women with term delivery	The authors state that adjustment was made for confounding variables without explicitly stating what the confounding variables were.
"Perinatal outcomes of teenage pregnancies according to gravidity and obstetric history" B. Reime B. A. Schuecking P. Wenzlaff September 2004 *Annals of Epidemiology* Vol.14 no.8 pp.619	Previous induced abortion	121% increased odds of preterm birth $p = 0.03$	Data was taken from routinely collected perinatal data in Lower Saxony, Germany, between 1990 and 1999. Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	207 teenagers with a single birth and a history of induced abortion	7,695 teenagers with a single first birth	• Smoking status • Nationality • Marital status • Maternal height • Maternal weight • Last antenatal visit
"The complex relationship between smoking in pregnancy and very preterm delivery. Results of the Epipage study" A. Burquet M. Kaminski L. Abrahma-Lerat J. P. Schaal G. Cambonie J. Fresson H. Grandiean P.Truffert L. Marpeau M. Vover J. C. Roze A. Treisser B. Larroque EPIPAGE Study Group March 2004	Women with a very preterm birth were 35% more likely to have had a previous induced abortion compared to women with a term birth $p = 0.05$		Data was taken from the French EPIPAGE study, which was collected from medical records and via interviews, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	862 women with a very preterm birth (27-32 weeks gestation)	567 women with a term delivery (39-40 weeks gestation)	Control and study groups significantly differed from each other in the following factors: • Maternal age • Marital status • Education • Employment • BMI • Previous induced abortion • Parity

BJOG: An International Journal of Obstetrics and Gynaecology Vol.111 no.3 pp.258-265						
"History of induced abortion as a risk factor for preterm birth in European countries: results of the EUROPOP survey" P. Ancel N. Lelong E. Papiernik M. Saurel-Cubizolles M. Kaminski March 2004 *Human Reproduction* Vol.19 no.3 pp.734-740	One previous induced abortion	15% increased odds of preterm birth p = 0.06	Data was gathered via a survey administered in sixty maternity units across seventeen European countries. The survey was carried out between 1994-1997, and included all women with a single preterm birth (22-36 weeks gestation) and every tenth woman with a single term delivery. Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	2938 women with a single preterm birth (confirmed by date of last menstrual period, ultrasound and/or neonatal examination), both stillborn and live	4781 women in the same maternity units with a single term birth	• Maternal age • Marital status • Social class • Smoking • Parity
	Two or more previous induced abortions	63% increased odds of preterm birth p < 0.0001				
	Overall (one or more previous induced abortions)	27% increased odds of preterm birth p = 0.0005				
"History of fetal loss and other adverse pregnancy outcomes in relation to subsequent risk of preterm delivery" A. Y. El-Bastawissi T. K. Sorensen C. K. Akafomo I. O. Frederick R. Xiao M. A. Williams March 2003 *Maternity and Child Health Journal* Vol.7 no.1 pp.53-58	One previous induced abortion	50% increased odds of preterm birth p = 0.056	Subjects were recruited from women who received prenatal care and subsequently delivered within the care network of the Swedish Medical Center. Women who delivered prematurely formed the test group, while a random selection from the remainder formed the control group. Data was obtained from medical records, and included information on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	312 women with a single preterm birth	424 women with a single term birth	• Maternal age • Race • Smoking status • Insurance status • Parity
"Physical and social predictors for pre-term births and low birth weight infants in Taiwan" Y. L. Ko Y. C. Wu P. C. Change June 2002 *The Journal of Nursing*	Two or more previous abortions	211% increased odds of preterm delivery p < 0.05	Subjects were recruited from three teaching hospitals in Taiwan. Data was obtained from medical records and via telephone interview. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Due in inaccessibility of full article, information could not be obtained on confounding factors and p values.		633 pregnant women	Not available

Research Vol.10 no.2 pp.83-89						
"Higher risk of preterm birth and low birth weight in women with periodontal disease" N. J. Lopez P. C. Smith J. Gutierrez January 2002 *Journal of Dental Research* Vol.81 no.1 pp.58-63	One or more previous abortions	150% increased odds of having a preterm low birth weight infant p = 0.036	Subjects were selected from women receiving prenatal care from a Santiago (Chile) public health clinic and delivery at El Salvador Hospital in the time period April 1998 to December 2000. Information was obtained from medical records and via interview and examination, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion. The outcome analysed was preterm term low birth weight infants, compared to normal births.	233 women with periodontal disease	406 women with no periodontal disease	None
"Impact of induced abortions on subsequent pregnancy outcome: the 1995 French national Perinatal survey" L. Henriet M. Kaminski October 2001 *British Journal of Obstetrics and Gynaecology* Vol.108 no.10 pp.1036-1042	One previous induced abortion	30% increased odds of preterm birth p = 0.05	Data on births in a one week period in 1995 was taken from the French National Perinatal Survey. Further data on chosen subjects, including number of previous induced abortions, was collected from interviews and medical records. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	1,487 women with one previous induced abortion 313 women with two or more previous induced abortions Only women with single pregnancies were included	10,536 women with no previous induced abortion Only women with single pregnancies were included	• Maternal age • Parity • History of previous adverse pregnancy outcome (prior stillbirth, preterm birth or small for gestational age baby) • Maternal weight before pregnancy • Marital status • Educational status • Maternal employment status • Nationality • Smoking during third trimester of pregnancy • Antenatal care
	Two or more previous induced abortions	90% increased odds of preterm birth p = 0.005				
	Overall (one or more previous induced abortions)	40% increased odds of preterm birth p = 0.001				
"Characteristics of Preterm Delivery and Low Birthweight Among 113,994 Infants in Alberta: 1994-1996" S.C. Tough L.W. Svenson D.W. Johnston D. Schopflocher	One or more previous induced abortion	16% increased odds of preterm birth. p < 0.01	Data taken from the Physician Notice of Live or Still Birth and Newborn Record for the Province of Alberta, Canada. Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	23,166 women with at least one previous abortion 9,480 women with two or more previous abortions	81,348 women with no history of abortion	• Multiple births • Stillbirth • Birth defect • Sex of infant • Marital status • Maternal age • Parity • Smoking status • Alcohol consumption

July-August 2001 Full text available at http://journal.cpha.ca/index.php/cjph/article/view/158/0						• Number of prenatal medical visits
"Are risk factors the same for small for gestational age versus other preterm births?" J. A. Zeitlin P. Y. Ancel M. J. Saurel-Cubizolles E. Papiernik July 2001 *American Journal of Obstetrics and Gynaecology* Vol.185 no.1 pp.208-215	Previous 1st trimester miscarriage or abortion	56% increased odds of non-small-for-gestational-age preterm birth p < 0.01 68% increased odds of small-for-gestational-age preterm birth p < 0.01	Data was gathered via a survey administered in sixty maternity units across seventeen European countries. The survey was carried out between 1994-1997, and included all women with a single preterm birth (22-36 weeks gestation) and every tenth woman with a single term delivery. Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	3,631 women with a non-small-for-gestational-age preterm birth 1,076 women with a small-for-gestational-age preterm birth	7,821 women with a single term birth	Control and study group differed significantly only in maternal age
	Previous 2nd trimester miscarriage or abortion	252% increased odds of non-small-for-gestational-age preterm birth p < 0.01 272% increased odds of small-for-gestational-age preterm birth p < 0.01				
"Risk factors for spontaneous preterm birth in two urban areas of Ukraine" S. C. Monaghan R. E. Little O. Hulchiy H. Strassner B. C. Gladen April 2001 *Paediatric and Perinatal Epidemiology* Vol.15 no.2 pp.123-130	Three or more previous induced abortions	45% increased risk of preterm birth	Data was taken from the 'Children of Ukraine' study; part of the European Longitudinal Study of Pregnancy and Childhood. Subjects were chosen from those within two regions of Ukraine with pregnancies between December 1992 and July 1994. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	136 women with a single preterm birth	2,887 women with a single term birth	None
"Changes in risk factors of preterm delivery in France between 1981 and 1995" L. Foix-L'Helias B. Blondel	Previous induced abortion (1995 cohort)	50% increased odds of preterm birth p < 0.001	Data was collected in 1981 and 1995 over a one month period. Data on maternal social and demographic characteristics and antenatal care was collected via interview. Data on delivery and child characteristics was collected from hospital records.	264 preterm infants in 1981 635 preterm infants in 1995	4,783 term infants in 1981 12,243 term infants in 1995	• Maternal age • Parity • Previous induced abortion • Previous adverse pregnancy outcome

October 2000 *Paediatric and Perinatal Epidemiology* Vol.14 no.4 pp.314-323						• Weight before pregnancy • Nationality • Marital status • Educational level • Employment status • Smoking status
"Early pregnancy predictors of preterm birth: the role of a prolonged menstruation-conception interval" J. Gardosi A. Francis February 2000 *BJOG: An International Journal of Obstetrics and Gynaecology* Vol.107 no.2 pp.228-237	Previous abortion	20% increased odds of preterm birth p = 0.004	Data was collected from clinical files at one healthcare institution. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.	1,485 women with a single live preterm birth	19,584 women with a single live term birth	• Maternal age • Height • Weight • Parity • Ethnicity • Smoking status • Alcohol consumption • History of abortion • History of preterm birth • Discrepancy between menstrual and ultrasound dates
"Factors associated with preterm births in southeast Brazil: a comparison of two birth cohorts born 15 years apart" H. Bettiol R. J. Rona S. Chinn M .Goldani M. A. Barbieri January 2000 *Paediatric and Perinatal Epidemiology* Vol.14 no.1 pp.30-38	Abortion prior to vaginal birth	42% increased odds of preterm birth p = 0.001	Data was collected from surveys conducted in maternity hospitals in Ribeirao Preto, Southeast Brazil, in 1978-79 and 1994. Survey data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Data was also drawn from interviews and medical records. Only single pregnancies were included. Other comments: No stated distinction was made between spontaneous and induced abortion.	384 preterm births in 1978-79 316 preterm births in 1994	4,701 term births in 1978-79 2,009 term births in 1994	• Employment • Maternal age • Previous abortion • Previous stillbirth • Hospital type (public or private) • Prenatal care • Year of survey
	Abortion prior to cesarean section	66% increased odds of preterm birth p = 0.002				
"Induced abortion and subsequent pregnancy duration" W. Zhou H. T. Sorensen J. Olsen December 1999	One previous induced abortion	89% increased odds of preterm birth p < 0.0001	Data was taken from three Danish national registries: • Medical Birth Registry • Hospital Discharge Registry • Induced Abortion Registry Test and control groups were chosen from women who had their first registered pregnancy between 1980 and 1982, and outcomes of	15,727 women with a first trimester induced abortion between 1980 and 1982	46,026 women who had a pregnancy between 1980 and 1982 that was not aborted	• Maternal age • Residence • Interpregnancy interval • Previous spontaneous abortions • Previous preterm deliveries
	Two previous induced abortions	166% increased odds of preterm birth p < 0.0001				

Obstetrics & Gynaecology Vol.94 no.6 pp.948-953	Three or more previous induced abortions	118% increased odds of preterm birth p = 0.003	subsequent pregnancies up to 1994 were identified. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.			
	Overall (one or more previous induced abortions)	103% increased odds of preterm birth p = 0.002				
"Very and moderate preterm births: are the risk factors different?" P. Ancel M. Saurel-Cubizolles G. C. Di Renzo E. Papiernik G. Breat November 1999 *British Journal of Obstetrics and Gynaecology* Vol.106 no.11 pp.1162-1170	Previous 1st trimester abortion	58% increased odds of preterm birth p < 0.0001 86% increased odds of very preterm birth p < 0.0001	Data was gathered via a survey administered in sixty maternity units across seventeen European countries. The survey was carried out between 1994-1997, and included all women with a single preterm birth (22-36 weeks gestation) and every tenth woman with a single term delivery. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	1,675 cases of very preterm birth (22-32 weeks gestation) 3652 cases of moderate preterm birth (32-36 weeks gestation)	7,965 women with a single term birth.	• Social factors • Smoking status • Maternal age • BMI • Obstetric history
	Previous 2nd trimester abortion	133% increased odds of preterm birth p < 0.0001 267% increased odds of very preterm birth p < 0.0001				
"Intrauterine lead exposure and preterm birth" L. E. Torres-Sanchez G. Berkowitz L. Lopez-Carrillo L. Torres-Arreola C. Rios M. Lopez-Cevantes November 1999 *Environmental Research* Vol.81 no.4 pp.297-301	Two or more previous abortions	139% increased odds of preterm birth p = 0.12	Subjects were recruited from three large public hospitals in Mexico city between January 1995 and August 1995. Data was collected via interview and laboratory analysis, and included social and demographic factors, maternal characteristics, supplement use, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	161 women with a preterm birth	459 women with a full term birth	Distribution of maternal age, parity and education were similar between the study and control group.
"Social differences of very preterm birth in Europe: interaction with obstetric history" P. Y. Ancel M. J. Saurel-Cubizolles	Previous 1st trimester abortion	83% increased odds of preterm birth p < 0.0001	Data was gathered via a survey administered in sixty maternity units across seventeen European countries. The survey was carried out between 1994-1997, and included all women with a single preterm birth (22-36 weeks gestation) and every tenth woman with a	1,605 women with a preterm birth	7,774 women with a term birth	• Country • Maternal age • Marital status The control group and test group did not differ

G. C. Di Renzo E. Papiernik G. Breat May 1999 *American Journal of Epidemiology* Vol.149 no.10 pp.908-915	Previous 2nd trimester abortion	270% increased odds of preterm birth p < 0.0001	single term delivery. Social status was defined by maternal educational level and household social class. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion.			significantly.
"Risk factors associated with preterm (<37+0 weeks) and early preterm birth (<32+0 weeks): univariate and multivariate analysis of 106 345 singleton births from the 1994 statewide perinatal survey of Bavaria" J. A. Martius T. Steck M. K. Oehler K. H. Wulf October 1998 *European Journal of Obstetrics & Gynaecology and Reproductive Biology* Vol.80 no.2 pp.183-189	One or more previous induced abortions	30% increased odds for preterm birth p < 0.0001 80% increased odds of very preterm birth p < 0.0001	Data was taken from the 1994 Statewide Perinatal Survey of Bavaria, which collects demographical, social, medical, obstetric and neonatal data, and which covered 88.3% of infants born in 1994. Information included social and demographic factors, maternal characteristics, maternal medical conditions, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	7,181 preterm infants, including 1,146 very preterm infants	99,164 term infants	• Parity • Post partum complications • Pregnancy interval • Previous small for gestational age infant • Previous preterm birth • Occupation • Pregnancy complications • Maternal age • Obesity • Infertility treatment
"Small Babies in Scotland: A Ten Year Overview 1987-1996" Information and Statistics Division, The National Health Service in Scotland, Scotland Program for Clinical Effectiveness 1998	Previous induced abortion	20% increased odds of preterm birth p < 0.001	Data was collected from the Scottish Morbidity Records and the Scottish Stillborn and Infant Death Survey for the period between 1987 and 1996. Data collected included maternal factors, pregnancy outcomes and neonatal outcomes.	1,563 women with a history of induced abortion and no miscarriage	12,745 women with no history of induced abortion	None
"Risk factors for preterm birth in an upper middle class Chinese population" C. P. Chen K. G. Wang Y. C. Yang	Two or more previous first trimester abortions	57% increased odds of preterm birth p = 0.06	Cases and controls were drawn from deliveries at a single hospital in Taipei, between March 1994 and February 1995. Study subjects were interviewed with a questionnaire post-delivery, and data was collected on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	301 women who had a preterm delivery	656 women who had a term delivery	Other than pregnancy outcomes, the control and test group differed in education and maternal age, which were adjusted for in the subsequent analysis

L. C. See December 1996 *European Journal of Obstetrics & Gynaecology and Reproductive Biology* Vol.70 no.1 pp.53-59			Data was also taken from medical and hospital records. The control group was made up of other women who delivered at full-term soon after each preterm delivery. Other comments: No stated distinction was made between spontaneous and induced abortion.			
"A comparison of risk factors for preterm labor and term small-for-gestational-age birth" J. M. Lang E. Lieberman A. Cohen July 1996 *Epidemiology* Vol.7 no.4 pp.369-376	Two previous induced abortions	90% increased odds of preterm birth p = 0.01	Data was obtained through interviews at the Boston Hospital for Women between August 1977 and March 1980. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	616 preterm infants born of a single gestation pregnancy	10,889 term infants born of a single gestation pregnancy	• Infant gender • Race • Maternal height • Pregnancy weight • Maternal age • Education • Insurance status • Marital status • Planned or unplanned pregnancy • Parity • Outcome of last pregnancy • Induced abortion • Spontaneous abortion • Stillbirths • Uterine exposure to diethylstilbesterol[18] • Incompetent cervix • Uterine anomaly • Weekly weight gain • Urinary tract infection • Smoking status • Caffeine intake • Marijauna use • Prenatal care
	Three or more previous induced abortions	260% increased odds of preterm birth p = 0.002				
"Determinants of preterm delivery in low-risk pregnancies" B. L. Harlow F. D. Frigoletto D. W. Cramer	One previous abortion	15% increased risk of spontaneous preterm labour	Data was drawn from the Routine Antenatal Diagnostic Imaging with Ultrasound Study (RADIUS), which collected data on women with low-risk pregnancies who delivered at 48 different hospitals in Illinois, Indiana, Iowa, Massachusetts, Missouri and Wisconsin. Data	754 women who had a single preterm delivery	14,194 women who had a single term delivery	• Maternal age • Race • Education • Pregnancy weight • Maternal height • Smoking status

[18] A synthetic hormone once used to try to prevent pregnancy complications; it has since been found to cause increased breast cancer rates in mothers, malformations in exposed fetuses, and increased vaginal/cervical cancers and pregnancy complications in daughters of treated mothers.

J. K. Evans M. L. LeFevre R. P. Bain D. McNellis April 1996 *Journal of Clinical Epidemiology* Vol.49 no.4 pp.441-448	Two previous abortions	39% increased risk of spontaneous preterm labour	was collected on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction was made between spontaneous and induced abortion. Results show a dose-response relationship.			• Alcohol consumption • Number of previous pregnancies • Parity • Abortions • Infant gender • Prenatal tests
"Association between bacterial vaginosis and preterm delivery of a low-birth-weight infant" S. L. Hillier R. P. Nugent D. A. Eschenbach M. A. Krohn R. S. Gibbs D. H. Martin M. F. Cotch R. Edelman J. G. Pastorek A. V. Rao December 1995 *The New England Journal of Medicine* Vol.333 no.26 pp.1737-1742	Previous pregnancy loss	70% increased odds of preterm birth $p < 0.001$	Subjects were recruited from seven medical centers between 1984 and 1989, and consisted of women with no known medical risk for preterm birth. Data collected included social and demographic factors, maternal characteristics, medical and reproductive history, maternal medical conditions and pregnancy outcomes. Data was obtained via questionnaire, examination and laboratory testing. Other comments: The 'pregnancy loss' category included induced and spontaneous abortions and stillbirths.	504 women with a preterm birth	9,893 women with a term birth	• Age • Marital status • Primigravidity[19] • Antibiotic use • Vaginal infection
"Risk factors for the development of preterm premature rupture of the membranes after arrest of preterm labor" D. A. Guinn R. L. Goldenberg J. C. Hauth W. W. Andrews E. Thom R. Romero October 1995 *American Journal of Obstetrics and Gynaecology*	Women in whom preterm rupture of the membranes developed were more likely to have had a previous abortion (34% vs 13%) $p = 0.001$		Data was obtained from a National Institute of Child Health and Human Development clinical trial, which collected information on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes (the clinical trial specifically looked at antibiotic therapy for preterm labour). Women were recruited from six different American centers. Other comments: All pregnancies included were single gestation. All women with preterm premature rupture of membranes went on to deliver preterm. No stated distinction was made between spontaneous and induced abortion.	44 women with threatened preterm labour who had preterm premature rupture of membranes	209 women with threatened preterm labour who did not have preterm premature rupture of membranes	• Maternal age • Parity • Number of previous births • Socioeconomic status • Abortion history • Spontaneous preterm birth history • Smoking status • Illicit drug use • Sexually transmitted diseases • Bacteriuria[20] • Vaginal bleeding • Hydramnios • Gestational age on admission

[19] Whether the mother was pregnant for the first time
[20] Bacteria in the urine, usually due to a urinary tract infection (UTI)

Vol.173 no.4 pp.1310-1315						• Cervical dilation on admission
"Factors associated with preterm birth in Cardiff, Wales. I. Univariate and multivariable analysis" P. J. Meis R. Michielutte T. J. Peters R. E. Sands E. C. Coles K. A. Johns August 1995 *American Journal of Obstetrics and Gynaecology* Vol.173 no.2 pp.590-596	Previous abortion	23% increased odds of preterm delivery p = 0.005	Data was taken from Cardiff Birth Surveys, which covered social and demographic factors, maternal characteristics, reproductive history and pregnancy and neonatal outcomes. Data was taken from the period between 1970 and 1979. Other comments: Preterm birth was classified as up to and including 36 weeks and 3 days gestation. Previous abortions included any pregnancy that ended prior to 28 weeks gestation without a live (viable) embryo or fetus.	1,111 preterm births	24,733 term births	• Maternal age • Maternal height • Weight • Parity • Previous abortions • Previous stillbirths • Smoking • Social class • Employment • Hemoglobin • Bacteriuria • Severe hypertension • Proteinuria[21] • Pre-eclampsia • Early pregnancy bleeding • Late pregnancy bleeding
"Epidemiological correlates of preterm premature rupture of membranes" A. Spinillo S. Nicola G. Piazzi K. Ghazal L. Colonna F. Baltaro October 1994 *International Journal of Obstetrics and Gynaecology* Vol.47 no.1 pp.7-15	One previous induced abortion	102% increased odds of preterm birth p = 0.06	Subjects were recruited from women who delivered at the Department of Obstetrics and Gynecology of the University of Pavia between 1988 and 1992. Controls were drawn from two consecutive deliveries after each case. Data was collected via questionnaire, and included social and demographic factors, maternal characteristics, reproductive history, medical variables and pregnancy outcomes. Other comments: Results show a dose-response relationship. p = 0.02	138 women with premature rupture of membranes	276 women with a term birth	None
	More than one previous induced abortion	188% increased odds of preterm birth p = 0.17				
"The epidemiology of preterm birth" J. Lumley September 1993	One previous induced abortion	55% increased risk of preterm birth	Data sourced from the Perinatal Data Collection Unit, Health Department, Victoria, Australia. Other comments: Results show a dose-response relationship.	Women with one, two or three previous induced abortions Over 300,000	Women without a history of induced or spontaneous abortions Over 300,000	None: article gives an overview rather than an in-depth analysis, and recommends further examination. However, author does state that
	Two previous induced abortions	146% increased risk of preterm birth				

[21] Protein in the urine, usually indicating that the kidneys are not working properly

Bailliere's Clinical Obstetrics and Gynaecology Vol.7 no.3 pp.477-498	Three previous induced abortions	458% increased risk of preterm birth		subjects total	subjects total	the increased risks associated with two or more induced abortion was found to be greater than other known risk factors for preterm birth, and therefore unlikely to be due to confounding factors.
"Low birth-weight in NSW, 1987: a population-based study" C. Algert C. Roberts P. Adelson M. Frommer August 1993 *The Australian and New Zealand Journal of Obstetrics and Gynaecology* Vol.33 no.3 pp.243-248	Previous induced abortion	37% increased odds of preterm birth $p < 0.001$	Data was taken from the New South Wales Midwives' Data Collection for 1987, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	4,465 women with a single preterm birth	68,393 women with a single term birth	• Maternal age • Marital status • Previous spontaneous abortion • Previous induced abortion • Previous stillbirth or neonatal death • First antenatal visit • Infant gender
"Risk Factors for Preterm Premature Rupture of the Membranes" M. A. Williams R. Mittendorf P. G. Stubblefield E. Lieberman S. C. Schoenbaum R. R. Monson 1993 *Journal of Maternal-Fetal and Neonatal Medicine* Vol.2 no.1 pp.27-33	Two or more previous induced abortions	91% increased risk of premature birth, with or without premature rupture of membranes $p < 0.05$	Data was collected from the Delivery Interview Program, conducted at the Boston Hospital for Women between 1977 and 1980. Data was obtained via interview and from medical records, and included social and demographic factors, maternal characteristics, reproductive history, antenatal care, lifestyle factors and pregnancy outcomes. Other comments: This study excluded women with induced preterm delivery. Results show a dose-response relationship.	307 women with preterm birth and premature rupture of membranes 488 women with preterm birth without premature rupture of membranes	2,252 women with full term birth	None
"Preterm Birth Subtypes Among Blacks and Whites" J. Zhang D. A. Savitz September 1992 *Epidemiology*	One previous abortion	12% increased risk of moderate preterm birth due to premature rupture of membranes 33% increased risk of very	Data was obtained from state computerised records of live births in North Carolina for the years 1988 and 1989. Information collected included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction made between induced	19,554 preterm births.	165,690 term births	None

Vol.3 no.5 pp.428-433		preterm birth due to premature rupture of membranes	and spontaneous abortions. Results show a dose-response relationship. Unable to obtain p values.			
	Two or more previous abortions	40% increased risk of moderate preterm birth due to premature rupture of membranes 145% increased risk of very preterm birth due to premature rupture of membranes				
"Preterm delivery and its risk factors" J. H. Gong January 1992 *Chinese Journal of Obstetrics and Gynaecology* Vol.27 no.1 pp.22-24	Previous induced abortion	110% increased odds of preterm birth	Study and control group subjects were recruited in Jianan and Jianhan District, Wuhan City in 1988. Other comments: Unable to access full content of article, therefore confounding factors and p value could not be obtained.	130 preterm infants born of single pregnancies	260 term infants born of single pregnancies	Not accessible
"Spontaneous preterm birth: a case control study" I. de Haas B. L. Harlow D. W. Cramer F. D. Jr Frigoletto November 1991 *American Journal of Obstetrics and Gynaecology* Vol.165 no.5 pt 1 pp.1290-1296	One previous induced abortion	50% increased risk of preterm delivery p =0.19	Subjects were selected from women who delivered between October 1988 and March 1989 at Brigham and Women's Hospital. Controls were matched by delivery data and maternal age. Data was obtained from medical records and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship. p = 0.02	140 women with a live single birth between 20 and 37 weeks gestation	280 women with a single term birth	• Marital status • Education • Ethnicity
	Two or more previous induced abortions	90% increased risk of preterm delivery p = 0.13				
	Overall (at least one previous induced abortion)	60% increased risk of preterm delivery p = 0.09				
"Risks of delivery during the 20th to 36th week of gestation" R. M. Pickering J. J. Deeks	First non-aborted pregnancy after previous induced abortion	51% increased odds of preterm birth p < 0.0001	Data was taken from the Scottish Morbidity Record 2 for the period 1980-1984. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	7,449 women carrying a first non-aborted pregnancy with a previous induced abortion	104,889 first-time pregnant women without a previous induced abortion	• Maternal age • Social class • Marital status • Maternal height • Previous livebirth • Previous perinatal

June 1991 *International Journal of Epidemiology* Vol.20 no.2 pp.456-466	Second or more non-aborted pregnancy after previous induced abortion	48% increased odds of preterm birth $p < 0.0001$		9,714 women with a second or more non-aborted pregnancy with a previous induced abortion	140,088 women with a second pregnancy or more without a previous induced abortion	death • Previous spontaneous abortion • Previous induced abortion
"Previous obstetric history and subsequent preterm delivery in Greece" V. Lekea-Karanika C. Tzoumaka-Bakoula J. Golding November 1990 *European Journal of Obstetrics & Gynaecology and Reproductive Biology* Vol.37 no.2 pp.99-109	Previous induced abortion	35% increased odds of preterm birth $p = 0.0021$	Data was taken from the Greek National Perinatal Survey, carried out in April 1983 and recording maternal obstetric history and birth outcomes. Other comments: Results show a dose-response relationship.	1,954 women with one or more previous induced abortions	4269 women with no previous induced abortions	• Marital status • Maternal age • Smoking status
"Maternal factors associated with the premature rupture of membrane in the low birth weight infant deliveries" K. S. Lee W. C. Lee K. H. Meng December 1988 *Korean Journal of Preventative Medicine* Vol.21 no.2 pp.207-216	Previous induced abortion	82% increased risk of premature rupture of membranes and delivery of low birth weight infant $p < 0.05$	Data was collected retrospectively on women who delivered low birth weight infants with premature rupture of membranes, and women who delivered normal birth weight infants without premature rupture of membranes. Information collected included maternal characteristics, reproductive history and pregnancy outcomes.	315 women with delivery of a low birth weight infant and premature rupture of membranes	546 women with delivery of a normal birth weight infant and no premature rupture of membranes	Not accessible
"Some biological and social factors of risk associated with the birth of pre-term infants" Dr G. Livshits L. Davidi E. Kobyliansky Y. Levi D. Ben-Amitai P. Merlob D. C. Rao 1988	Previous abortion	19% increased risk of preterm birth $p = 0.019$	Subjects were recruited from women delivering at the Beilinson Medical Center (Israel) between February 1985 and December 1986. Information was collected on social and demographic factors, maternal characteristics, reproductive history, pregnancy complications, medications and pregnancy and neonatal outcomes.	113 women with a preterm birth	103 women with a term birth	• Maternal age • Education • Previous miscarriages • Previous abortions • Parity • Weight • Height • Body measurements • Pregnancy complications • Previous preterm births • Maternal medications

Genetic Epidemiology Vol.5 no.3 pp.137-149						
"Pregnancy outcomes after in vitro fertilization. A collaborative study on 2342 pregnancies" J. Cohen M. J. Mayaux M. L. Guihard-Moscato 1988 *Annals of the New York Academy of Science* Vol. 541 pp.1-6	One or more previous induced abortions	210% increased risk of preterm birth $p < 0.02$	Data was collected from 21 IVF centers for the period between 1979 and 1985, and 34 IVF centers for the year 1985. 2,329 pregnancies resulting from IVF were studied. Data collected included maternal characteristics, reproductive history and pregnancy outcomes.	421 women with a preterm birth	1,035 women with a term birth	Not stated
"Ethnic differences in preterm and very preterm delivery" P. H. Shiono M. A. Klebanoff November 1986 *American Journal of Public Health* Vol.76 no.11 pp.1317-1321	Two previous induced abortions	31% increased odds of preterm birth $p = 0.14$ 76% increased odds of very preterm birth $p = 0.1$	Data was collected on women receiving prenatal care in any of 13 clinics in Northern California between 1974 and 1977. Information was obtained via questionnaire and examination of medical records, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	2,377 women with a preterm birth	25,593 women with a term birth	• Ethnicity • Maternal age • Education • Marital status • Employment • Infant gender • Parity • Previous spontaneous abortions • Prenatal care • Smoking status • Alcohol use during pregnancy
	Three or more previous induced abortions	179% increased odds of preterm birth $p = 0.0006$				
"The effect of induced abortion in adolescence on the manifestations of spontaneous abortion, premature labor and birth weight" A. Peterlin L. Andolsek May-August 1986 *The Yugoslav Journal of Gynaecology and Perinatology*	Adolescents with previous induced abortion	37% increased risk of preterm delivery	Other comments: Full article content was not accessible, including study design, confounding factors and p values.	320 pregnant adolescents with a history of induced abortion.	514 adolescents pregnant for the first time.	Not accessible

Vol.26 no.3-4 pp.49-52						
"Risks of preterm delivery and small-for-gestational age infants following abortion: a population study" R. M. Pickering J. F. Forbes November 1985 *British Journal of Obstetrics and Gynaecology* Vol.92 no.11 pp.1106-1112	One previous induced abortion	35% increased odds for preterm birth p = 0.0001	Data was obtained from hospital discharge records (Scottish Morbidity Record 2) for women delivering in Scotland between 1980 and 1981. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	3000 women with a single pregnancy and a past history of induced abortion 4000 women with a single pregnancy and a past history of spontaneous abortion	45,879 women in their first pregnancy 34,033 women in their second pregnancy with a previous livebirth	• Maternal height • Maternal age • Infant gender • Marital status • Social class
"The relationship between spontaneous and induced abortion and the occurrence of second-trimester abortion in subsequent pregnancies" J. I. Puyenbroek L. A. M. Stolte 1983 *European Journal of Obstetrics and Gynecology* Vol.14 no.5 pp.299-309	First non-aborted pregnancy after previous induced abortion	300% increased risk of preterm birth (between 16 and 28 weeks gestation) p = 0.04	Subjects were recruited from women with a preterm delivery, not related to pregnancy complications, at the Department of Obstetrics and Gynaecology of the Free University Hospital of Amsterdam between 1973 and 1977. Two controls matched for age and parity were selected for each subject. Data was collected on social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	28 women with a preterm birth between 16 and 28 weeks gestation	56 women with full term birth	The control group and the study group differed significantly only in maternal height

"An epidemiological study of preterm delivery" G. S. Berkowitz January 1981 *American Journal of Epidemiology* Vol.113 no.1 pp.81-92	Previous induced abortion	130% increased odds of preterm birth	Test groups were drawn from women who delivered at Yale-New Haven Hospital between January 1977 and January 1978. Data was collected via interview and included social and demographic factors, maternal characteristics, medical and reproductive history and pregnancy outcomes. Controls were drawn from a random sample of women delivering during the same time period.	175 women who delivered single live preterm infants	313 controls who delivered single live term infants	• Race • Socioeconomic status • Pre-pregnancy weight • Weight gain • Infertility history • Induced abortion • First trimester bleeding • Physical activity during pregnancy • Second trimester alcohol consumption • Desirability of pregnancy • Marital status • Maternal age
"Association of Induced Abortion With Subsequent Pregnancy Loss" A. A. Levin S. C. Schoenbaum R. R. Monson P. G. Stubblefield K. J. Ryan June 1980 *Journal of the American Medical Association* Vol.243 no.24 pp.2495-2499	Two or more previous induced abortions	230% increased risk of preterm birth p = 0.02	Subjects were recruited from women at the Boston Hospital for Women between July 1976 and February 1978. Data was collected from medical records and via interview, and included social and demographic factors, reproductive history and pregnancy outcomes. Other comments: The authors note that 15.5% of women in the study and 18.1% of women in the control group who did not disclose at interview that they had had an abortion were later found to have done so on review of their medical records. Results show a dose-response relationship.	41 women with an extremely preterm birth (20-27 weeks gestation)	1,072 women with a term birth	• Maternal age • Age at menarche • Partner's age • Education • Ethnicity • Religion • Private versus non-private physician • Payment method • Blood group • Rh factor • Diabetes • Smoking • Gravidity • Parity • Previous live births • Previous spontaneous losses • Whether or not pregnancy was planned • Medication assistance to become pregnant • Oral contraceptive use • IUD use • History of pelvic surgery • History of dilation and curettage • Appendectomy • Pelvic inflammatory disease • Gonorrhoea • Uterine fibroids • Incompetent cervix

"Gestation, birth-weight, and spontaneous abortion in pregnancy after induced abortion. Report of Collaborative Study by W.H.O. Task Force on Sequelae of Abortion" January 1979 *Lancet* Vol.1 no.8108 pp.142-145	Previous vacuum aspiration abortion	285% increased risk of preterm delivery when compared to women with a previous livebirth $p < 0.01$	Subjects were recruited from eight European cities. Three study groups were formed and examined separately due to irreconcilable differences between different locations. Data was obtained via interview and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	1,643 women with a previous induced abortion 1,372 women with a previous spontaneous abortion	2,186 women with a previous livebirth 2,027 women with a first pregnancy	The authors state that they took into account multiple factors affecting birthweight and gestation, though they do not state explicitly what these factors were in regards to gestation
"Late sequelae of induced abortion in primigravidae. The outcome of the subsequent pregnancies" O. Koller S. N. Eikhom 1977 *Acta Obstetricia et Gynecologica Scandinavica* Vol.56 no.4 pp.311-317	Induced abortion of first pregnancy	217% increased risk of premature delivery $p = 0.002$	Data was obtained from the medical records of a single obstetrics department. Data included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	137 women with a first pregnancy ended by induced abortion	129 women with first pregnancy ending in a live birth post 28 weeks gestation 133 women with a first pregnancy ended by spontaneous abortion	The study and control groups differed in age (those with a previous induced abortion had a mean age 4 years younger than those in the other groups) and onset of menstruation
"Factors associated with spontaneous preterm birth" J. Fedrick A. B. M. Anderson May 1976 *British Journal of Obstetrics and Gynaecology* Vol.83 no.5 pp.342-350	One or more previous abortions	27% increased risk of premature delivery	Data taken from the First British Perinatal Mortality Survey for March, 1958. Information included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: No stated distinction drawn between induced and spontaneous abortions. Results show a dose-response relationship.	33 women with one previous abortion 8 women with two more previous abortions	242 women with no history of abortion	None specified
"Effects of legal termination on subsequent pregnancy" J. A. Richardson G. Dixon May 1976 British Medical Journal	Previous induced abortion	163% increased risk of premature birth $p < 0.05$	Subjects were recruited from the Bristol Maternity Hospital and matched with controls with the same parity. Information collected included reproductive history and pregnancy outcomes.	211 women with a previous induced abortion	211 women with a previous spontaneous abortion	Study and control groups were matched for parity

Vol.1 no.6021 pp.1303-1304						
"The effect of spontaneous and induced abortion on prematurity and birthweight" G. Papaevangelou A. S. Vrettos C. Papadatos D. Alexiou May 1973 *BJOG: An International Journal of Obstetrics & Gynaecology* Vol.80 no.5 pp.418-422	Previous induced abortion	63% increased risk of preterm birth $p < 0.001$	Subjects were recruited from women delivering at the Alexandra Maternity Hospital (Greece) between 1969 and 1970. Data was collected via interview and structured questionnaire and medical records, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes. Other comments: Results show a dose-response relationship.	196 women with a preterm birth and a history of induced abortion	721 women with a term birth and a history of induced abortion	None specified
"Prediction of Low Birthweight and Prematurity by a Multiple Regression Analysis with Maternal Characteristics Known since the Beginning of the Pregnancy" M. Kaminski J. Goujard C. Rumeau-Rouquette 1973 *International Journal of Epidemiology* Vol.2 no.2 pp.195-204	Previous abortion	15% increased risk of premature birth	Subjects were recruited from 12 Paris hospitals between 1963 and 1969. Data was collected via interview and examination, and included social and demographic factors, maternal characteristics, reproductive history and pregnancy outcomes.	1,236 women with a previous abortion	2,896 women without a previous abortion	None
Second-trimester abortion after vaginal termination of pregnancy" C. S. W. Wright S. Campbell	First non-aborted pregnancy after previous induced abortion	790% increased risk of second trimester spontaneous abortions $p < 0.05$	Subjects were selected from antenatal patients at the Queen Charlotte's Hospital. Information collected included maternal characteristics, reproductive history and pregnancy outcomes. Other comments:	91 women with an induced abortion of the pregnancy prior to the current one	91 women with a spontaneous abortion in the pregnancy prior to the current one	None specified

J. Beazley June 1972 *The Lancet* Vol.299 no.7763 pp.1278-1279			Second trimester spontaneous abortions are considered comparable to preterm delivery for the purposes of this record.		3,223 women with no history of spontaneous or induced abortion	