

Study	Design	Aim, to examine:	Population	Methods	Outcomes
Reddy 2006 doi:10.1016/j.ajog.2006.06.019	Cohort, secondary analysis, USA	Maternal age > stillbirth rates throughout gestation	5,458,735 singleton gestations without reported congenital anomalies	Hazard rates (risks) of stillbirth were calculated for each week of gestation.	Compared with women younger than 35 years old, the relative risk of stillbirth was 1.28 (95% confidence interval 1.17, 1.41) for women 35 to 39 years old without medical conditions, and 1.79 (95% confidence interval 1.52, 2.10) for women 40 years old or older at 37 to 41 weeks. This effect of maternal age persisted despite accounting for medical disease, parity, and race/ethnicity. The risk of stillbirth for women 35 to 39 years at 37 to 41 weeks' gestation was 0.26% and 0.37% for women 40 years or older.
Huang 2008 doi:10.1503/cmaj.070150	Systematic review	Maternal age > stillbirth risk	All	31 retrospective cohort and 6 case-control studies	In 24 (77%) of the 31 cohort studies and all 6 of the case-control studies, we found that greater maternal age was significantly associated with an increased risk of stillbirth; relative risks varied from 1.20 to 4.53 for older versus younger women. In the 14 studies that presented adjusted relative risk, we found no extensive change in the direction or magnitude of the relative risk after adjustment.
Bayrampour 2012 doi:10.1186/1471-2393-12-100	Qualitative study, Canada	Risk perception of pregnant women of AMA	15 nulliparous women aged 35 years or older, in third trimester, singleton pregnancies	In-depth interviews	Four main themes emerged: definition of pregnancy risk, factors influencing risk perception, risk alleviation strategies, and risk communication with health professionals. Pregnancy at age 35 years or older within a healthy context and in the absence of other risk factors was perceived as a low risk pregnancy by the majority of our participants. However, in the presence of risk factors such as pregnancy complications, limited physical activity, unfavorable screening tests results, previous poor reproductive history, and anxiety, the risk associated with age was highlighted, and women were inclined to recognize their age as a risk factor for their pregnancy.
Page 2013 doi:10.1016/j.ajog.2013.05.045	Retrospective cohort, USA	Maternal age → fetal/infant mortality by gestational age at term		For each week of term gestation, the risk of mortality associated with delivery was compared with composite mortality risk of expectant management. This expectant management risk was calculated to estimate the composite mortality risk with remaining pregnant an additional week by combining the risk of stillbirth during the additional week of pregnancy and infant death risk following delivery at the next week.	<p>The fetal/infant mortality risk of expectant management is greater than the risk of infant death at 39 weeks' gestation in women 35 years old or older (15.2 vs 10.9 of 10,000, $P < .05$). In women younger than 35 years old, the risk of expectant management also exceeded that of infant death at 39 weeks (21.3 vs 18.8 of 10,000, $P < .05$). For women younger than 35 years old, the overall expectant management risk is influenced by higher infant death risk and does not rise significantly until 41 weeks compared with women 35 years old or older in which it increased at 40 weeks.</p> <ul style="list-style-type: none"> • Higher stillbirth rate for women ≥ 35 years • Lower infant death rate for women ≥ 35 years • Increased stillbirth rate from 39 weeks onwards • Decreased stillbirth rate from 37 weeks until 41 weeks (higher at 42 weeks)

<p>Laopaiboon 2014</p> <p>doi:10.1111/1471-0528.12659</p>	<p>Secondary analysis, cross-sectional multicountry data</p>	<p>AMA → adverse pregnancy outcomes</p>	<p>359 health facilities in 29 countries in Africa, Asia, Latin America, and the Middle East, n=308,149 singletons</p>	<p>ORs of individual severe maternal and perinatal outcomes in women of AMA, compared with women aged 20–34 years, using a multilevel, multivariate logistic regression model, accounting for clustering effects within countries and health facilities. The confounding factors included facility and individual characteristics, as well as country (classified by maternal mortality ratio level).</p>	<p>The prevalence of pregnant women with AMA was 12.3%. AMA significantly increased the risk of maternal adverse outcomes, including maternal near miss, maternal death, and severe maternal outcome, as well as the risk of stillbirths and perinatal mortalities.</p>
<p>Waldenström 2015</p> <p>doi:10.1097/AOG.0000000000000947</p>	<p>Population-based registry study, Sweden</p>	<p>AMA → stillbirth risks and parity</p>	<p>1,804,442 singleton pregnancies >28 weeks</p>	<p>In each parity group, the risk of stillbirth at age 30–34 years, 35–39 years, and 40 years and older compared with age 25–29 years was investigated by logistic regression analyses adjusted for sociodemographic factors, smoking, body mass index, history of stillbirth, and interdelivery interval. Also, two low-risk groups were investigated: women with a high level of education and nonsmoking women of normal weight.</p>	<p>Stillbirth rates increased by maternal age: 25–29 years 0.27%; 30–34 years 0.31%; 35–39 years 0.40%; and 40 years or older 0.53%. Stillbirth risk increased by maternal age in first births. Compared with age 25–29 years, this increase was approximately 25% at 30–34 years and doubled at age 35 years. In second, third, and fourth birth or more, stillbirth risk increased with maternal age in women with a low and middle level of education, but not in women with high education.</p>
<p>Schimmel 2015</p> <p>doi:10.1007/s00404-014-3469-0</p>	<p>Retrospective cohort study, Israel</p>	<p>AMA and parity → maternal and perinatal outcomes</p>	<p>24,579 singleton births</p>	<p>We compared spontaneously-conceived singleton births of AMA mothers with spontaneously-conceived singletons of mothers aged 24-27 years</p>	<p>There were no maternal or perinatal deaths. Incidence of maternal hypertension and diabetes was significantly greater in AMA, especially oldest AMA. AMA including primiparous had significantly more elective CS than younger including primiparous controls, respectively, and were more likely to deliver LGA neonates. Primiparous AMA women did not have increased incidence of LGA babies but significantly increased incidence of SGA infants.</p>
<p>Walker 2016</p> <p>doi:10.1056/NEJ-Moa1509117</p>	<p>RCT, UK</p>	<p>Induction for women aged ≥35 years → CS</p>	<p>619 primigravida ≥35 years, singleton live fetus in a cephalic presentation. 61% declined to participate</p>	<p>Women were randomly assigned to labor induction between 39 weeks 0 days and 39 weeks 6 days of gestation or to expectant management (i.e., waiting until the spontaneous onset of labor or until the development of a medical problem that mandated induction; waited until 41 - 42 weeks).</p>	<p>In an intention-to-treat analysis, there were no significant between-group differences in the percentage of women who underwent a cesarean section (98 of 304 women in the induction group [32%] and 103 of 314 women in the expectant-management group [33%]; relative risk, 0.99; 95% confidence interval [CI], 0.87 to 1.14) or in the percentage of women who had a vaginal delivery with the use of forceps or vacuum (115 of 304 women [38%] and 104 of 314 women [33%], respectively; relative risk, 1.30; 95% CI, 0.96 to 1.77). There were no maternal or infant deaths and no significant between-group differences in the women's experience of childbirth or in the frequency of adverse maternal or neonatal outcomes.</p>

<p>Walker 2016</p> <p>doi:10.1016/j.ejogrb.2015.11.004</p>	<p>Systematic review, meta-analysis</p>	<p>Induction for women aged ≥ 35 years \rightarrow CS</p>	<p>5 RCTs with 2674 women, study populations consist of women with IUGR, mild PIH, macrosomia or twin pregnancies.</p>	<p>Studies were included if they were randomized controlled trials comparing induction of labour with expectant management at term with intact membranes with a singleton or multiple pregnancy in a cephalic presentation. A quantitative meta-analysis of individual patient data (IPD) using a random-effects model to calculate odds ratios.</p>	<p>There was no statistically significant increase in caesarean section rates seen in either analysis.</p> <p>Remarks: reference list is incomplete (included studies are not all shown in reference list). Study populations consist of women with suspected IUGR, mild PIH, macrosomia or twin pregnancies.</p>
<p>Lean 2017</p> <p>doi:10.1371/journal.pone.0186287</p>	<p>Systematic review, meta-analysis</p>	<p>AMA \rightarrow stillbirth and other pregnancy complications</p>	<p>63 cohort studies and 12 case-control studies with 44,723,207 women</p>	<p>The effect of age on pregnancy outcome was investigated by random effects meta-analysis and meta-regression. Stillbirth rates were correlated to rates of maternal diabetes, obesity, hypertension and use of assisted reproductive therapies (ART).</p>	<p>AMA increased the risk of stillbirth (OR 1.75, 95%CI 1.62 to 1.89) with a population attributable risk of 4.7%. Similar trends were seen for risks of FGR, neonatal death, NICU unit admission restriction and GDM. The relationship between AMA and stillbirth was not related to maternal morbidity or ART.</p>
<p>Knight 2017</p> <p>doi:10.1371/journal.pmed.1002425</p>	<p>Retrospective cohort, UK</p>	<p>Induction at ≥ 39 weeks \rightarrow perinatal mortality among AMA</p>	<p>77,327 nulliparous women aged ≥ 35 years, singleton, without pre-existing comorbidities</p>	<p>We used English HES data to compare perinatal mortality between induction of labour at 39, 40, and 41 weeks of gestation and expectant management (continuation of pregnancy to either spontaneous labour, induction of labour, or CS section at a later gestation). Analysis was by multivariable Poisson regression with adjustment for maternal characteristics and pregnancy-related conditions.</p>	<p>Induction of labour at 40 weeks (compared with expectant management) was associated with a lower risk of in-hospital perinatal death (0.08% versus 0.26%; adjusted risk ratio [adjRR] 0.33; 95% CI 0.13-0.80, $P = 0.015$) and meconium aspiration syndrome (0.44% versus 0.86%; adjRR 0.52; 95% CI 0.35-0.78, $P = 0.002$). Induction at 40 weeks was also associated with a slightly increased risk of instrumental vaginal delivery (adjRR 1.06; 95% CI 1.01-1.11, $P = 0.020$) and emergency caesarean section (adjRR 1.05; 95% CI 1.01-1.09, $P = 0.019$). The number needed to treat (NNT) analysis indicated that 562 (95% CI 366-1,210) inductions of labour at 40 weeks would be required to prevent 1 perinatal death.</p> <p>Remarks: denominators of induction and expectant group are not similar: antepartum stillbirths are not included in the induction group. It would have made more sense if 'planned' induction versus 'planned' expectant were compared. But since this was probably not possible in this study, the groups are not comparable.</p>

Korb 2019

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Case-control,
France 2012-
2013Association
between CS and
severe acute intra-
or postpartum
maternal morbidity,
and the role of
maternal age.1444 cases of
intra- or postpar-
tum severe acute
maternal morbidity
that were not a
result of a condi-
tion present before
delivery1444 cases compared with 3464
controls (randomly selected in a
1/50 ratio). Associations between
delivery modes and severe acute
maternal morbidity were estimat-
ed in a propensity score-matched
sample.Cesarean deliveries were significantly associated with a higher risk
of severe acute maternal morbidity (adjusted odds ratio [OR] 1.8,
95% confidence interval [CI] 1.5–2.2). This association increased
with maternal age and was particularly marked for women aged 35
years or older (adjusted OR 2.9, 95% CI 1.9–4.4). This increased
risk was significant for cesarean deliveries during labour in women
of all age groups and for those before labour only in women aged 35
years or older (adjusted OR 5.1, 95% CI 2.3–11.0).**Ankarcrona 2019**

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Nationwide
population-ba-
sed cohort study,
Sweden 1992-
2011Women of AMA
and young women
with induction or
spontaneous la-
bour → outcomes7,796 nulliparous
women ≥40 years
and 264,262
nulliparous women
25-29 years, live,
singleton, term,
cephalic presen-
tation, planned
vaginal deliveryCrude and adjusted odds ratios
(aOR) were calculated by uncon-
ditional logistic regression and
presented with 95% confidence
intervals (CI).Overall, 79% of women ≥40 years with a trial of labor reached a
vaginal delivery. After spontaneous onset, intrapartum cesarean
section was performed in 15.4% of women ≥40 years compared with
5.4% of women 25-29 years (aOR 3.07, 95%CI 2.81 to 3.35). Ope-
rative vaginal delivery was performed in 22.3% of women ≥40 years
compared with 14.2% of women 25-29 years (aOR 1.71 95%CI 1.59
to 1.85). After induction of labor, an intrapartum cesarean section
was performed in 37.2% women ≥40 years compared with 20.2%
women 25-29 years (aOR 2.51, 95%CI 2.24 to 2.81). Operative
vaginal delivery was performed in 22.6% of women ≥40 years
compared with 18.4% women 25-29 years (aOR 1.45, 95%CI 1.28
to 1.65). The risk of obstetric anal sphincter injury or 5-minutes
Apgar score <7 was not increased in women ≥40 years, regardless
of onset of labor.