
Morbidity and mortality associated with older maternal age at birth, Queensland, 2014 and 2015

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Older maternal age is associated with a higher risk of pregnancy complications and adverse outcomes^{1 2}. In 2015, 19.5% of all mothers giving birth in Queensland were aged 35 years and over³. The incidence and risks of a range of outcomes and conditions affecting these older mothers between 2014 and 2015 were analysed and updates to previous work⁴ are provided in this report.

Singleton births were extracted from the Perinatal Data Collection (PDC) Queensland for all mothers aged 20 or older who gave birth in Queensland during 2014 and 2015. 5,098 mothers who were less than 20 years of age were excluded from this analysis as there are documented increased risks associated with giving birth at this younger age^{5 6}. Admitted patient data from these births was used to ascertain additional morbidity details. Incidence of congenital anomalies was sourced from the Congenital Anomaly Linked File (CALF)*.

In 2014 and 2015, there were 93,421 mothers aged 20-34 (reference group) and 23,336 mothers aged 35 years and over (Table 1). Mothers aged 35 years and over were about half as likely to be Indigenous compared to mothers aged 20-34 years (3.0% and 6.2%, respectively). They were also less likely to be primiparous compared to mothers aged 20-34 years (25.0% and 43.0%, respectively).

Table 1: Numbers and percentages of singleton births to mothers aged 20 and over, Queensland, 2014 and 2015

Groups	20-34 years		35+ years	
	Number	Percentage (%)	Number	Percentage (%)
Number of mothers and babies	93,421	76.6% (overall)	23,336	19.3% (overall)
Number of Indigenous mothers and babies	5,771	6.2% (of age group)	698	3% (of age group)
Primiparous [†]	40,111	43% (of age group)	5,938	25% (of age group)

Source: Perinatal Data Collection (PDC), Department of Health, Queensland

Maternal morbidity

The results of this analysis are summarised in Table 2 and Table 3. When compared against previously published figures from 2009 and 2010⁴, rate ratios are similar for all characteristics, complications and adverse outcomes[‡]. Mothers aged 35 years and over were 31% less likely to be underweight, but otherwise they showed a similar weight distribution to the reference group.

*The Congenital Anomaly Linked File combines records from the Queensland Perinatal Data Collection (PDC) Queensland, the Queensland Hospital Admitted Patient Data Collection (QHAPDC) (including terminations of pregnancy prior to 20 weeks gestation), Australian Bureau of Statistics Cause of Death and Queensland Death Registration Data where a congenital anomaly has been recorded.

[†] Primiparous means women giving or having given birth for the first time

[‡] Some numbers/rate ratios are not directly comparable with figures published in StatBite#56:

- Diabetes numbers increased from 1 July, 2012 due to changes in Australian Coding Standards
- Postpartum haemorrhage is now based on PDC blood loss field; previously it was based on ICD-10-AM codes
- Congenital anomaly (incl. chromosomal and non-chromosomal) data is now sourced from the Congenital Anomaly Linked File (CALF); previously CALF was not available
- Fetal malpresentation is now based on modified ICD-10-AM and/or PDC birth presentation field; previously based on ICD-10-AM codes only
- Augmentation of labour is now based on PDC labour assist field; previously it was based on ACHI codes.

The conditions that were significantly more likely to occur in the older group were diabetes and placenta praevia (66% and 111% higher respectively after adjustment for parity). Antepartum haemorrhage and gestational hypertension were slightly more likely to occur (16% and 26% respectively). No significant difference was observed for premature rupture of membranes and placental abruption. Older mothers were slightly less likely (6%) to have a postpartum haemorrhage.

Caesarean section delivery was 52% more common among older mothers than for those aged 20-34 years. It was also 22% less likely to be preceded by any form of labour after adjusting for parity. Older mothers were also 37% more likely to have a forceps or vacuum delivery. In cases of non-caesarean delivery, older mothers were more likely (29%) to require induction of labour.

Table 2: Numbers and rate ratios of selected complications and adverse outcomes for mothers aged 35+ years vs mothers aged 20-34 years, singleton births, Queensland, 2014 and 2015

Selected complications & adverse outcomes	20-34 years Number	35+ years Number	Rate Ratio, unadjusted (95% CI)	Rate Ratio, adjusted for parity (95% CI)
Underweight (BMI < 18.5)	5,405	891	0.69 (0.64,0.74)	0.69 (0.64,0.74)
Healthy weight (BMI 18.5-24.99)	47,976	11,910	-	-
Overweight (BMI 25.0-29.99)	20,815	5,545	1.05 (1.02, 1.08)	1.01 (0.98, 1.04)
Obese class I (BMI 30.0-34.99)	10,386	2,662	1.03 (0.98, 1.07)	0.96 (0.92, 1.00)
Obese class II (BMI 35.0-39.99)	4,634	1,211	1.05 (0.98, 1.12)	0.96 (0.90, 1.02)
Obese class III (BMI 40.0+)	2,787	770	1.11 (1.02, 1.20)	1.00 (0.92, 1.08)
Unknown BMI	1,418	347	0.99 (0.88, 1.11)	0.90 (0.80, 1.01)
Antepartum haemorrhage (ICD-10-AM: O20, O46)	3,206	902	1.13 (1.05, 1.21)	1.16 (1.08, 1.25)
Diabetes (ICD-10-AM: E10, E11, E13, E14, O24.1, O24.2, O24.3, O24.4, O24.9)	9,271	3,848	1.66 (1.60, 1.73)	1.66 (1.60, 1.72)
Gestational hypertension (ICD-10-AM: O13)	3,616	1,002	1.11 (1.03, 1.19)	1.26 (1.18, 1.36)
Placental abruption (ICD-10-AM: O45)	729	205	1.13 (0.96, 1.31)	1.10 (0.94, 1.29)
Placenta praevia (ICD-10-AM: O44)	917	473	2.06 (1.85, 2.31)	2.11 (1.89, 2.36)
Postpartum haemorrhage (Blood loss of >= 500mL)	6,824	1,556	0.91 (0.86, 0.96)	0.94 (0.89, 1.00)
Premature rupture of membranes (ICD-10-AM: O42)	20,505	4,498	0.88 (0.85, 0.91)	1.01 (0.98, 1.04)
Non-caesarean delivery, not augmented/induced	29,053	5,150	-	-
Augmentation of labour, Non-caesarean delivery	16,105	2,583	0.94 (0.90, 0.98)	1.04 (0.99, 1.08)
Induction of labour, Non-caesarean delivery	19,843	5,015	1.22 (1.18, 1.25)	1.29 (1.25, 1.33)
Vaginal, non-instrumental delivery	54,850	10,945	-	-
Forceps/Vacuum delivery	10,151	1,803	0.91 (0.86, 0.95)	1.37 (1.30, 1.44)
Caesarean section delivery	28,420	10,588	1.44 (1.41, 1.47)	1.52 (1.48, 1.55)
Caesarean delivery preceded by labour	11,285	2,851	0.68 (0.65, 0.71)	0.78 (0.75, 0.81)

Source: Perinatal Data Collection (PDC), Department of Health, Queensland; Queensland Hospital Admitted Patient Data Collection (QHAPDC), Department of Health, Queensland; Master Linkage File (MLF), Department of Health, Queensland (version 1314)

Neonatal morbidity and mortality

Infants born to older mothers were 25% more likely to be born preterm, but 12% less likely to be macrosomic (>4kg birthweight). Both groups of mothers had the same likelihood of having babies who were heavy for gestational age, and who experienced fetal distress. Older mothers had higher levels of fetal malpresentation (34% more likely) than the reference group.

Cases of congenital anomaly and perinatal death were more likely to occur for older mothers. Although cases of chromosomal congenital anomaly were rare (325 cases for these two groups in 2014 and 2015), it was 2.5 times as likely among infants born to older mothers. Cases of non-chromosomal congenital anomaly were slightly higher (7%) among infants born to older mothers. While perinatal deaths were also rare (1,011 cases for the two groups in 2014 and 2015), stillbirths were 42% more likely and neonatal deaths were 9% more likely (although not significantly) to occur in births to older mothers.

Table 3: Numbers and rate ratios of selected complications and adverse outcomes for babies born to mothers aged 35+ years vs babies born to mothers aged 20-34 years, singleton births, Queensland, 2014 and 2015

Selected complications & adverse outcomes	20-34 years Number	35+ years Number	Rate Ratio, unadjusted (95% CI)	Rate Ratio, adjusted for parity (95% CI)
Congenital anomaly	12,699	3,288	1.04 (1.00, 1.08)	1.07 (1.03, 1.12)
<i>Chromosomal</i>	199	126	2.53 (2.03, 3.17)	2.45 (1.95, 3.07)
<i>Non-chromosomal</i>	12,636	3,247	1.03 (0.99, 1.07)	1.07 (1.03, 1.11)
Heavy for gestational age (>90 percentile) [^]	9,880	2,691	1.09 (1.04, 1.14)	1.00 (0.96, 1.05)
Macrosomia (>4000g) [^]	11,226	2,616	0.93 (0.89, 0.97)	0.88 (0.84, 0.92)
Preterm birth (<37 weeks) [^]	6,375	1,967	1.24 (1.17, 1.30)	1.25 (1.18, 1.31)
Fetal distress (Including fetal heart rate anomaly, meconium in amniotic fluid and other fetal stress; ICD-10-AM: O68)	21,164	4,384	0.83 (0.80, 0.86)	0.99 (0.95, 1.02)
Fetal malpresentation (ICD-10-AM: O32, or O64 recorded for mother, P01.7 or P03.1 recorded for baby)	10,908	3,154	1.16 (1.11, 1.20)	1.34 (1.28, 1.39)
Perinatal death	763	248	1.30 (1.13, 1.50)	1.32 (1.14, 1.52)
Stillbirth	529	183	1.38 (1.17, 1.64)	1.42 (1.20, 1.69)
Neonatal death	234	65	1.11 (0.85, 1.47)	1.09 (0.83, 1.44)

[^]In rare cases where relevant data elements were incomplete or indeterminate, records were excluded from analysis.

Source: Perinatal Data Collection (PDC), Department of Health, Queensland; Queensland Hospital Admitted Patient Data Collection (QHAPDC), Department of Health, Queensland; Master Linkage File (MLF), Department of Health, Queensland (version 1314); Congenital Anomaly Linked File (CALF), Department of Health, Queensland (extracted 18/12/2017)

Conclusion

During 2014 and 2015 in Queensland, mothers aged 35 and over were more likely to have medical conditions such as diabetes and gestational hypertension, compared with mothers aged 20 to 34 years. These older mothers also had higher rates of adverse outcomes including antepartum haemorrhage, placenta praevia, preterm birth and fetal malpresentation.

The magnitude of rate ratios were largely consistent (for comparable complications and adverse outcomes) with previously published results for 2009 and 2010.

While cases of chromosomal congenital anomaly were rare, they were much more likely to occur in infants born to older mothers. Perinatal deaths, due largely to stillbirths, were observed more frequently among babies of older mothers.

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