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Maternal characteristics in pregnancies affected by Trisomy 21 (Down Syndrome) in Queensland 2007-2008

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Trisomy 21 (or Down syndrome) is a congenital anomaly which is characterised by an excess of chromosome 21 material. It remains the most common chromosomal abnormality in Queensland, having been reported at a rate of 17.1 cases per 10,000 fetuses during 2007-2008¹. Roughly fifty percent of the affected fetuses were terminated at prior to 20 weeks gestation.

Australian data describing the epidemiology of Trisomy 21 is available², although this has not been updated since 2003. Advancing maternal age at the time of conception was identified as a primary risk factor², and there is some evidence that the incidence was higher among overseas-born than among Australian-born women. There was no evidence that the incidence of Trisomy 21 was higher among Indigenous mothers when compared to non-Indigenous mothers, and area remoteness was not a strong predictor. The epidemiology of Trisomy 21 has not been described in detail for Queensland. The availability of new data³ now allows us to look at the characteristics of women whose pregnancies are affected by Trisomy 21.

In Queensland during 2007-2008, there were 127 pregnancies affected by Trisomy 21, yielding an incidence of 17.5 cases per 10,000 pregnancies (Table 1). Of these, 64 (50.4%) were terminated at prior to 20 weeks gestation, which corresponds to a termination rate of 8.8 terminations per 10,000 pregnancies. The incidence of Trisomy 21 increased steadily with maternal age, ranging from 8.0 cases per 10,000 among mothers aged less than 24 years, to 50.8 cases per 10,000 amongst mothers aged 35 years and older. The proportion of pregnancies that were terminated increased sharply with increasing age and termination rate per 10,000 pregnancies was highest in the oldest group (35 years and older). Trisomy 21 was slightly more common in overseas-born compared to Australian-born women (Incidence: 19.5 versus 17.0 per 10,000) and overseas-born women were more likely to terminate the pregnancy at prior to 20 weeks gestation. Incidence rates decreased slightly with increasing socioeconomic disadvantage, and were higher amongst women who resided in regional or remote areas when compared to women from major cities. The association with socioeconomic status may be confounded by age. In the most advantaged group, 23.6% of mothers were aged 35 years or older; this fell to 14.4% in mothers of the most disadvantaged group. Women from the middle of the socioeconomic spectrum were more likely to terminate the pregnancy at prior to 20 weeks gestation, as were women from regional or remote regions. This was evident in both the proportion of pregnancies terminated and the termination rate per 10,000 pregnancies.

Based on existing data it is not clear whether the incidence of pregnancies affected by Trisomy 21 has changed in Queensland or in Australia over recent years. There is a lack of national trends data, particularly since 2003, and earlier Queensland trends data did not include terminations of pregnancy³. The incidence rate in Queensland in 2007/2008 was lower than that reported nationally in 2003 (17.5 versus 26.1 per 10,000). The determinants of Trisomy 21 remain to be fully elucidated, although advancing maternal age at the time of conception remains a primary risk factor

Table 1: Incidence and termination of pregnancies affected by Trisomy 21 (Down Syndrome) by maternal characteristics in Queensland, 2007/2008

	Incidence ¹	Percentage of pregnancies terminated	Termination rate
Age of mother			
Less than 25 years	8.0	25.0	2.0
25-34 years	10.8	40.5	4.4
35 + years	50.8	62.3	31.7
Country of birth			
Australia	17.0	47.0	8.0
Overseas	19.5	63.0	12.3
SEIFA ²			
Least disadvantaged (4 th -5 th Quintile)	18.3	45.7	8.4
2 nd and 3 rd Quintile	17.8	55.7	9.9
Most disadvantaged (1 st Quintile)	15.1	45.0	6.8
ARIA ³			
Major cities	15.0	42.4	6.4
Regional and remote areas	20.4	57.4	11.7
Total	17.5	50.4	8.8

¹Rate per 10,000 pregnancies

²Socio-economic Indexes for Areas: Index of Advantage-Disadvantage.

³Accessibilty and Remoteness Index of Australia

Sources: Queensland Admitted Patient Data Collection, Queensland Health – TOP prior to 20 weeks gestation (extracted November 2008)

Queensland Perinatal Data Collection, Queensland Health – Live births and deaths in fetuses of at least 20 weeks gestation or 400 grams birth weight (extracted November 2008)

References:

1. Howell, S. Stat Bite#14. Trisomy 21 (Down Syndrome) in Queensland 2007-2008
2. Abeywardana S & Sullivan EA 2008. Congenital Anomalies in Australia 2002-2003. Birth anomalies series no. 3 Cat. No. PER 41. Sydney: AIHW National Perinatal Statistics Unit
3. Howell, S. Technical Report #1. Technical notes on QH_CONG_ANOM: Congenital anomalies in terminations of pregnancy at less than 20 weeks gestation.
4. Roselli T 2006. Summary statistics on congenital anomalies in Queensland 1988-2008. Information circular 75. Health Statistics Centre. Queensland Health.

Related Publications:

1. Howell, S. Stat Bite#14. Trisomy 21 (Down Syndrome) in Queensland 2007-2008