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The effect of Body Mass Index on delivery method of low risk pregnancies in public and private patients, Queensland 2008

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The effect that maternal obesity has on the difference in caesarean section (CS) rates between public and private patients is unclear. Maternal obesity has been linked to an increased risk of caesarean section delivery¹, however, maternal age and socioeconomic status may also be important factors. Women delivering in the private sector are typically older and higher in socioeconomic status than those in the public sector²⁻⁴. The purpose of this analysis was to determine whether the association between body mass index (BMI) and caesarean delivery differed between public and private patients.

Data for the 2008 calendar year were extracted from the Queensland Perinatal Data Collection (QPDC). Self-reported weight and self-reported or measured height are recorded in the QPDC and were used to calculate BMI at the time of conception⁵. Categories of BMI⁶ were defined as underweight or normal (<25 kg/m², hereafter referred to as normal), overweight (25-<30 kg/m²), and obese (≥30 kg/m²). Public and private patients were defined by their chargeable status.

Mothers were classified using the Robson Ten Group Classification System (TGCS)³, which aims to identify clinically relevant groups of women who experience different caesarean section rates. This analysis was conducted on women in TGCS group 1, defined as: nulliparous*, single cephalic, 37+ weeks' gestation at birth, spontaneous labour. This group is comprised of women with uncomplicated obstetric characteristics and generally experience a 'normal' conclusion to a pregnancy. The association between BMI and delivery method is less likely to be confounded by factors such as previous caesarean section, multiple pregnancy or medical indications that are likely to require induction of labour or caesarean prior to labour. Mothers with a missing BMI (4.3%) and/or missing chargeable status (0.2%) were excluded, as were those aged 35 years or older (8.5%).

In 2008 there were 11,222[†] mothers younger than 35 who were classified in TGCS group 1. Of these mothers, 62.5% were classified as having a normal BMI at the time of conception, 74.8% were public patients and 16.8% delivered via caesarean section.

The distributions of BMI and delivery method differed between public and private patients (Table 1). Higher proportions of private patients had a normal BMI at the time of conception and caesarean delivery than public patients.

Table 1. Distribution of BMI category and delivery method for mothers aged under 35 in Ten Group Classification System (TGCS) group 1, Queensland 2008

BMI	Public %	Private %	Total %
Normal	59.7	70.9	62.5
Overweight	25.4	21.0	24.3
Obese	14.9	8.1	13.2
Total	100.0	100.0	100.0
Delivery	%	%	%
Caesarean	15.1	22.0	16.8
Vaginal	84.9	78.0	83.2
Total	100.0	100.0	100.0

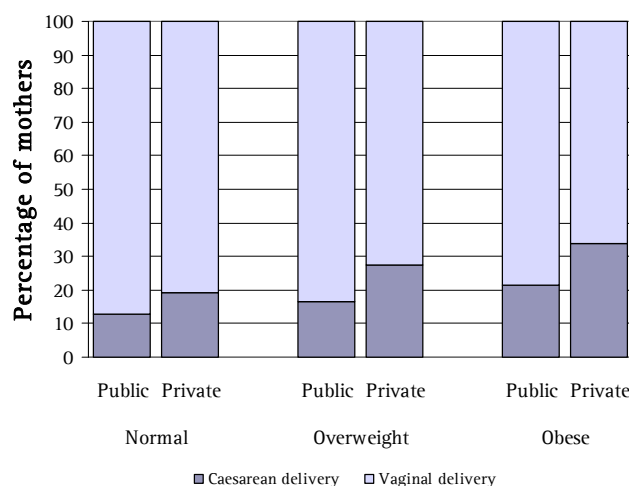
Source: Queensland Perinatal Data Collection, Queensland Health (extracted 29th October 2009; updated May 2010)

* Nulliparous: of, relating to, or being a female that has not borne offspring

[†] Data extracted on 29th October 2009 are not finalised and subject to change; figure updated May 2010

There was an association between BMI and delivery method. In both public and private patients, the proportion of caesarean deliveries increased with increasing BMI category (Figure 1). In public patients, the proportion of caesarean deliveries increased from 12.9% in the normal category to 21.6% in the obese category, compared with an increase from 19.0% to 33.9% in private patients. The overall relative increase from the normal to obese categories was similar for public and private patients. It is not clear whether BMI has a direct effect on caesarean rates, or whether it may influence caesareans via an effect on other determinants of caesareans.

Figure 1. Method of delivery by BMI category and sector for mothers aged under 35 in TGCS 1, Queensland 2008



Source: Queensland Perinatal Data Collection, Queensland Health (extracted 29th October 2009; updated May 2010)

References

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