

An investigation of the relationship between obesity, twinning rates and perinatal outcomes in Grampian

Researchers

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Aims

- 1) To examine whether natural twins are more likely to be born to women who are overweight or obese than to women of normal weight.
- 2) To determine whether twins born to overweight or obese women are more likely to be premature or underweight.

Project Outline/Methodology

A database was created for the Grampian region of Scotland containing information on pregnancies and deliveries booked at Aberdeen Maternity Hospital between 1976 and 2006. Merging data from the Aberdeen Maternity and Neonatal Databank with data from the Aberdeen Fertility Centre allowed twin deliveries to be categorised as natural conceptions or those resulting from assisted reproductive technology (ART). The data were anonymised before being passed to the researcher.

Body Mass Index (used as a measure of overweight/obesity) was calculated using the formula $\text{weight}/\text{height}^2$ and women were categorised into four groups according to BMI as follows - *Low*: less than 20.0 kg/m²; *Normal*: 20.0 - 24.9 kg/m²; *Overweight*: 25.0 - 29.9 kg/m²; *Obese*: greater than or equal to 30.0 kg/m².

Twinning rates over the last 30 years were calculated. The relationships between BMI and twinning were described for natural and ART pregnancies, taking into account maternal characteristics (e.g. age, parity, smoking status, socioeconomic status). The relationships between BMI and pre-term delivery (<34 weeks; <28 weeks) and caesarean section were investigated using logistic regression for natural twins, ART twins and singleton deliveries.

Key Results

Between 1976 and 2006 there were a total of 1,135 twin pregnancies amongst Aberdeen city residents. The twinning rate increased from around 10 twin pregnancies per 1,000 deliveries to over 15 twins per 1,000 deliveries by the end of the period. While this

trend appears largely to have been driven by twins conceived after fertility treatment, there was also a significant increase in naturally conceived twins.

Women with natural twin pregnancies were on average older, taller and heavier than their contemporaries with singleton pregnancies, but only height had an effect on twinning rates after taking other factors into account. Women with higher BMIs were more likely to have premature babies (<28 weeks) and this effect was stronger among twins than singletons.

Conclusions

No relationship between BMI and twinning has been found in this population, but tall women were slightly more likely to have a twin pregnancy.

What does this study add to the field?

The findings challenge suggestions from previous work of a relationship between BMI and twinning. This is useful because it provides the first evidence against such a relationship, and this can be used together with results from past and future studies to increase medical knowledge on the subject.

Implications for Practice or Policy

These data show a trend of increasing natural twinning rates in this population. Multiple pregnancies generate higher NHS costs than singleton births as a result of increased antenatal, obstetric and neonatal treatment and long-term disability services due to prematurity. The absence of an association between BMI and twinning in this population may reassure health service planners in a context where levels of obesity are rising, but this finding needs to be confirmed in other populations.

Where to next?

The new dataset created by this study is a valuable resource that can be used to explore any research question that requires the separation of twin pregnancies into natural/ART.

Further details from:

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