
1N Heleshihurst, 2J Rankin, 3J Wilkinson, 4CD Summerrbell, 1Health and Social Care Research Institute, University of Teesside, Middlesbrough, Tees Valley, UK; 3Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK; 4North East Public Health Observatory, Durham University, Stockton, UK; 5School of Medicine and Health, Durham University, Stockton, UK

Objectives: Maternal obesity has serious implications to the health of both mothers and infants, including maternal and neonatal death, stillbirth, congenital anomalies, poor breastfeeding rates, and obesity in the offspring. There are also additional complications during antenatal, intrapartum, and postnatal periods which impact on maternity services. However, there is an absence of national statistics for maternal obesity in the UK. This study is the first to describe a nationally representative maternal obesity research dataset in England.

Design of the Study: Descriptive epidemiological study using routinely collected data.

Setting: 34 maternity units in England.

Participants: 619,323 women who delivered at the maternity units sampled, between January 1989 and December 2007.

Main Outcome Measures: Trends in first trimester maternal BMI status over time and geographical distribution of maternal obesity by Government Office Regions in England. Demographics of the population were analysed to identify any maternal obesity associated health inequalities, including maternal age, parity, ethnic group, deprivation, and employment. All demographics were tested for multicollinearity. Logistic regression adjusted for all included demographics as confounders.

Results: The demographic characteristics of the study population were representative when compared to census and deprivation data. Obesity in the first trimester of pregnancy is significantly increasing over time, having more than doubled from 7.6% to 15.6% over the 19 years studied (p<0.001). There is significant geographic variation in the incidence of maternal obesity, with the West Midlands, Yorkshire and the Humber and North East Government Office Regions having higher than national average incidence of first trimester obesity. There are health inequalities associated with maternal obesity, including increased odds of being obese with increasing age (1.02, 95% CI 1.02 to 1.02), parity (1.17, 95% CI 1.16 to 1.18), black ethnic group (1.78, 95% CI 1.70 to 1.87), and deprivation (2.20, 95% CI 2.13 to 2.28). There is also an association between super morbid obesity and unemployment (1.50, 95% CI 1.12 to 2.02).

Conclusions: The increase in maternal obesity at booking has yielded an additional 47,500 women per year requiring high dependency care in England. The demographics of women most at risk of first trimester obesity highlight health inequalities associated with maternal obesity which need to be addressed.