Maternal overweight and obesity is associated with increased risk of type 1 diabetes in offspring of parents without diabetes regardless of ethnicity

ESM Methods

Database

Data was derived from the newly established Migration and Health cohort (M&H Co.) [13]. This cohort was created by individual record-linkage between more than fifteen Swedish national registries using personal identification numbers (PIN). The purpose of the Migration and Health cohort is to study diabetes, cancer, cardiovascular and psychiatric diseases among immigrants, and their offspring in Sweden. In the present study we used the following registries included in the M&H Co.: 1) The Swedish total populations register, in which we retrieved demographic information such as sex, date of birth, country of birth, and date of immigration and emigration [14]. 2) The Swedish Medical Birth Registry (MBR), which contains data on more than 98% of births in Sweden since 1973 [15]. Information is prospectively collected on maternal demographics, medical history and complications during pregnancy, delivery, and the neonatal period. 3) The National Patient Register (NPR) which contains data on inpatient care with national coverage since 1987 and data on outpatient visits to specialist clinics and day visits to hospital since 2001. The NPR provides data on the main diagnosis and up to eight secondary diagnoses based on the International Classification of Diseases (ICD) (ICD-9: 1987-1996 and ICD-10:1997 and onwards) [16, 17]. 4) The Cause of Death Register, which provides information on the date of death, the main and contributing causes of death [18]. 5) The Multi-Generation Register contains information of biological links between children and their parents via PIN [19]. The MBR is submitted to yearly quality checks by the Swedish National Board of Health and Welfare. The latest extensive validation including information on maternal pre-pregnancy weight and height, maternal age, maternal smoking in early pregnancy, gestational age and infant’s birth weight concluded that the quality of data in the register is high [15]. The quality and completeness of data in the NPR is evaluated on a regular basis by the Swedish National Board of Health and Welfare. The result of the latest validation showed that the diagnoses are valid in 85-95% for inpatient care and in about 80% of all visits to the specialized outpatient care [16, 17]