

R062: Multimorbidity and pregnancy: epidemiology, clusters, prescriptions and preterm birth – QUB

Multimorbidity is when a person has two or more long-term health problems. It can be difficult for people with several long-term illnesses to manage their conditions. They may have to coordinate appointments with different specialists and their medications need to be managed carefully.

Multimorbidity is becoming more common in pregnancy. However, we don't understand why this is and what the consequences are for the pregnancy, the birth of the baby and the mother and baby's health in the long-term. If we can understand what makes a pregnant woman more likely to have multimorbidity, we can find ways to prevent it and design health services tailored to their specific needs.

Our research will look at electronic health records to find out how many women have multimorbidity in pregnancy and what illnesses they have. We will examine if factors such as age, weight or social background influence whether a woman has multimorbidity in pregnancy. We will also find out which illnesses group together (cluster), which clusters are most common. We will then compare what happens to mothers (and their babies) with and without multimorbidity during pregnancy. To begin with, we will focus on preterm birth as an outcome.

To understand how medications affect the health of the mother and the baby, we will first find out which medicines women take during different time points of the pregnancy. We will also identify the common combinations of medications which women with multimorbidity take during pregnancy. This knowledge will help doctors prescribe safely during pregnancy.

Primary research question:

Is there an association between increasing numbers of health problems (morbidities) in pregnancy and risk of preterm birth?

Secondary research objectives:

Epidemiology of pre-existing multi-morbidity (MM) in pregnancy

- a. To estimate the proportion of pregnancies affected by each of the pre-existing morbid conditions obtained from a phenome definition workshop.
- b. To estimate the proportion of pregnancies with increasing number of pre-existing morbid conditions (one, two, three morbidities and so on).
- c. To determine proportions of pregnancies with simple MM (defined as two or three morbidities) and complex MM (four or more morbidities).
- d. To estimate the proportion of pregnancies with pre-existing combinations of morbid conditions.
- e. To investigate determinants of MM status in pregnant women by obtaining prevalence estimates among subgroups stratified by five-year age bands, deprivation quintile, ethnicity, parity, body mass index (BMI) subgroups, smoking status and calendar year.

Morbidity clusters

- a. To identify pre-existing morbidity clusters in pregnancies.
- b. To investigate determinants of MM clusters in pregnancies by performing cluster analysis among subgroups stratified by five-year age bands, deprivation quintile, ethnicity, parity, BMI subgroups, smoking status and calendar year.

Prescription in pregnancy

- a. To estimate the proportion of pregnancies with a prescription record for drugs catalogued according to British National Formulary (BNF) chapters.
- b. To stratify the prescription proportions to: before conception, different trimesters of pregnancy and post-natal.
- c. To characterise common combinations of prescriptions.

Outcome of pregnancies with pre-existing MM: preterm birth

- a. To estimate the odds of preterm birth among pregnant women with simple (two morbidities) versus complex (four morbidities) MM.
- b. To estimate the odds of preterm birth among pregnant women with pre-existing combinations of morbidities.
- c. To estimate the odds of preterm birth among pregnant women with morbidity clusters.

HSC data is required to enable anonymised linkage of maternal and child health data using regional maternal data collected from NIMATS (from 1st January 2011 to latest date) and data recorded within the EPD (from 1st of January 2010 to latest date), Admission and Discharges Database (from 1st of January 2006 to latest date) and National Health Application and Infrastructure Services (NHAIS) (from 1st January 2011 to latest date).