National Maternity and Perinatal Audit

Technical Report

Feasibility of evaluating perinatal mental health services using linked national maternity and mental health data sets, based on births between 1 April 2014 and 31 March 2017 in Scotland

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE
RCPCH Royal College of Paediatrics and Child Health Leading the way in Children's Health
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HQIP Healthcare Quality Improvement Partnership

The National Maternity and Perinatal Audit (NMPA) is led by a partnership of the Royal College of Obstetricians and Gynaecologists (RCOG), the Royal College of Midwives (RCM), the Royal College of Paediatrics and Child Health (RCPCH), and the London School of Hygiene and Tropical Medicine (LSHTM).

The NMPA is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) on behalf of NHS England, the Welsh Government and the Health Department of the Scottish Government. HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality. HQIP holds the contract to commission, manage and develop the NCAPOP, comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies (www.hqip.org.uk/national-programmes).

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Abbreviations and glossary

Definitions for abbreviations and terms that are not specific to this report can be found in the NMPA Clinical Report 2019.[1]

CHI	A unique numeric patient identifier allocated by ISD
HQIP	Healthcare Quality Improvement Partnership
ICD-10	International Classification of Diseases, 10th Revision
ISD	Information Services Division, a division of National Services Scotland, part of NHS Scotland
MBU	Inpatient psychiatric mother-and-baby unit
NMPA	The National Maternity and Perinatal Audit
NRS	National Records of Scotland
SBR	Scottish Birth Record
SMR-01	Scottish Morbidity Record-01, General/Acute Inpatient and Day Case data set
SMR-02	Scottish Morbidity Record-02, Maternity Inpatient and Day Case data set
SMR-04	Scottish Morbidity Record-04, Mental Health Inpatient and Day Case data set (psychiatric hospital admissions)

Executive summary

Introduction

In this short report, we describe the feasibility of using linked national data sets to evaluate perinatal mental health services. Perinatal mental health conditions are common. About 10% of pregnant women and 13% of women who have just given birth experience a mental health problem. Some perinatal mental health problems can, if not adequately treated, have significant and long-lasting effects on a woman and her baby.

For this report, we only used Scottish data sources. The data sets include episodes of admission to secondary care, including hospital admission for perinatal mental health conditions. The results based on Scottish data are expected to inform future analyses of similar data from England and Wales. Specific data sets on mental health services in Wales were not yet available at the time of this study.

The report consists of three parts. First, we describe the data sets that were used and how they were linked. Second, we present a grouping of mental health diagnoses that are similar with respect to their prognosis and treatment (to maximise the clinical relevance) while limiting the number of diagnosis groups (to maximise statistical power). Third, we use the results of this preparatory work to demonstrate the clinical relevance of the linked data sets by describing a number of clinical outcomes according to the timing of the perinatal mental health admissions.

Methods

We used linked national maternity and mental health data for Scotland on all births that took place between 1 April 2014 and 31 March 2017, and inpatient admissions for mental health conditions between 1 April 2000 and 31 March 2018.

Births records were identified in the National Records of Scotland (NRS). These records were used as a 'spine' against which records from all other Scottish Morbidity Record (SMR) data sets were linked: general/acute inpatient records (SMR-01), maternity inpatient records (SMR-02), mental health inpatient records (SMR-04) and the Scottish Birth Record (SBR).

Women who had a mental health admission were identified in SMR-04 data as well as in SMR-01 data if their admission record contained a diagnosis code from Chapter V ('Mental and behaviour disorders') of the International Classification of Disease, 10th Revision (ICD-10).

Findings

Both mental health inpatient data (SMR-04) and general/acute inpatient data (SMR-01) need to be used to identify women who had a hospital admission for mental health indications. We identified 3457 births in women who had a mental health admission. About two-thirds of the mental health admissions were identified in SMR-04 and about one-third in SMR-01.

163 109 births were identified. 3043 (2.1%) of these births were in women with a prepregnancy history of a mental health admission. 176 (5.8%) of the women with prepregnancy mental health admission were also admitted during the perinatal period (during pregnancy or in the first year after giving birth). In comparison, only 414 (0.3%) of the 160 066 births of women without a prepregnancy mental health admission had a perinatal mental health admission. Therefore, in the majority of cases

– 414 of the 590 perinatal mental health admissions (70.2%) – the perinatal mental health admission was a women's first mental health admission.

Diagnostic codes were grouped into eight diagnosis groups aiming to maximise the clinical relevance and statistical power. Based on this grouping, we found that major depressive disorders were the most frequently observed diagnoses (22.9%) among the 590 women with a perinatal mental health admission, followed by admissions for anxiety and post-traumatic stress disorders (19.3%). However, if we only considered the 176 women who had a perinatal mental health admission after a prepregnancy mental health admission, the most frequently observed diagnoses were related to psychoactive substance use (25.0%).

Following this preparatory work, we demonstrated the clinical relevance of these data. Babies born to women with a prepregnancy history of perinatal health admission were found to be more likely to be preterm (12.0% born before 37 weeks), to have low birthweight (4.3% with birthweight below 2500 g in term babies) or to need some medical help (2.6% with an Apgar score less than 7 at 5 minutes after birth) than babies born to women without such a history (7.1%, 2.0%, and 1.7%, respectively). Outcomes in babies of women who had a perinatal mental health admission (590) were similar to those of women with a prepregnancy history of mental health admission (3043).

Admission to an inpatient psychiatric mother-and-baby unit (MBU) was most frequent in women who had a mental health admission in the first 12 weeks after giving birth (79.5%) and considerably lower in women who had a mental health admission during pregnancy (23.7%) or between 13 and 52 weeks after giving birth (38.1%).

Conclusions

This study demonstrates the feasibility as well as the clinical relevance of using linked national maternity and mental health data sets from Scotland to assess the care that women with perinatal mental health problems receive. Despite only identifying women with severe perinatal mental health conditions, linkage of data sets of secondary care admission will offer an important opportunity to monitor the impact of national initiatives to improve perinatal mental health services in all four nations of the UK.

Key findings and recommendations

Key findings

KF1 In Scotland, the national registry of all births including stillbirths (NRS) can be used as a 'spine' against which maternity inpatient data (SMR-02), general/acute inpatient data (SMR-01) and mental health inpatient data (SMR-04) can be linked.

KF2 Both the data set of admissions to psychiatric hospitals and the data set of admissions to general hospitals need to be explored to identify women with a mental health admission.

KF3 A perinatal mental health admission (an admission during pregnancy or in the first year after giving birth) was identified in 590 (0.4%) of 163 109 births that took place in Scotland between 1 April 2014 and 31 March 2017. The risk of a perinatal mental health admission was 5.8% in women with a prepregnancy history of mental health admissions and 0.3% in women without such a history.

KF4 The perinatal mental health admission was the first mental health admission in 70.2% of the 590 births in women with a perinatal mental health admission.

KF5 A grouping of relevant mental diagnoses was created. This grouping showed that major depressive disorders (22.9%) and anxiety and post-traumatic stress (19.3%) were the two most frequent diagnosis groups among the women with perinatal mental health admissions.

KF6 Babies of women with a history of prepregnancy mental health admission have a higher risk of preterm birth, low birthweight, or needing some medical help than babies of women without such a history.

KF7 Admission to an inpatient psychiatric mother-and-baby unit (MBU) was most frequent in women who had a mental health admission in the first 12 weeks after giving birth (79.5%) and considerably lower in women who had a mental health admission during pregnancy (23.7%) or between 13 and 52 weeks after giving birth (38.1%).

Recommendations

R1 National organisations responsible for the evaluation of perinatal mental health services should aim to use a data set that includes all live births and stillbirths as a 'spine' against which all other data sets (maternity, general/acute and mental health inpatient data) can be linked.

(Organisations responsible for the evaluation of perinatal mental health services)

R2 Both data sets of admissions to psychiatric hospitals and of admissions to general/acute hospitals should be used to identify women with a mental health admission before and during the perinatal period.

(Organisations responsible for the evaluation of perinatal mental health services)

R3 Options of linking with data sets that include records of mental health care provided in the community should be explored so that perinatal mental health problems that are treated in the community can also be identified, and reported separately.

(Organisations involved in the study and assessment of perinatal mental health services)

R4 The classification with eight groups of mental health diagnoses described in this report should be considered to study and evaluate perinatal mental health services.

(Organisations involved in the study and assessment of perinatal mental health services; providers of mental health services and providers of maternity services, and services users)

R5 The implementation of guidelines for perinatal mental health services and other initiatives to improve these services should be evaluated using national linked data sets.

(National policy makers, including NHS England, NHS Scotland and NHS Wales; organisations involved in the study and assessment of perinatal mental health services)

Introduction

The National Maternity and Perinatal Audit

The National Maternity and Perinatal Audit (NMPA) is a national audit of NHS maternity services across England, Scotland and Wales, commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England, the Welsh Government and the Health Department of the Scottish Government. The NMPA is led by a partnership of the Royal College of Obstetricians and Gynaecologists, the Royal College of Midwives, the Royal College of Paediatrics and Child Health, and the London School of Hygiene and Tropical Medicine.

The NMPA aims to produce high-quality information that can be used by commissioners and providers of maternity services as well as by the users of these services to benchmark against national standards and recommendations where these exist, and to identify good practice among service providers and specific clinical areas for improvement.

The NMPA consists of three separate but related elements:

- an organisational survey of maternity and neonatal care in England, Scotland and Wales providing an overview of care provision and of services and options available to women
- a clinical audit of a number of key measures to identify unexpected variation between service providers or regions
- a programme of 'sprint' audits and feasibility studies to address specific clinical topics as well as to evaluate the feasibility of specific methodological approaches related to data linkage and analysis.

This technical report, describing the results of an evaluation of the feasibility and usefulness of linking maternity data and mental health data, is an example of a technical study.

Perinatal mental health

Perinatal mental health conditions are those that occur during pregnancy or in the first year following the birth of a child. These conditions have been recognised as a major public health concern by the World Health Organization.[2] Epidemiological studies report that about 10% of pregnant women and 13% of women who have just given birth experience a mental health condition,[3,4] and these are considered to be among the most frequent morbidities of pregnancy and the postnatal period.

When evaluating perinatal mental health services, a number of different aspects need to be considered. First, it is important to differentiate between women with a pre-existing condition (a continuation of an existing period of ill health or the onset of a new episode in women with a mental health history) and women seeking mental health support for the first time during pregnancy or in the postnatal period. Women with a pre-existing condition are at increased risk of a relapse during pregnancy or postnatally.[5]

Second, a distinction is often made between non-psychotic mental health conditions, including depression, anxiety, eating disorders and personality (or complex post-traumatic stress) disorders, and the often more severe psychiatric illnesses, including schizophrenia, affective psychosis and bipolar disorders.

Third, if left untreated, some mental health conditions can have significant and long-lasting effects on the woman and her pregnancy, and on her child's cognitive, social and emotional development.[6–8]

Large geographical variations in provision of perinatal mental health services have been reported.[9–12] National guidelines in the UK recommend that specialist multidisciplinary perinatal community services and inpatient psychiatric mother-and-baby units (MBUs) are available to support women with a mental health problem during pregnancy and the postnatal period.[9,10,12,13]

Aim of this technical report

The NMPA collates information about antenatal, intrapartum and postnatal care provided by the NHS for women giving birth in England, Scotland and Wales. The NMPA uses only electronic data that are collected routinely through maternity information systems and national maternity services data sets.[14]

These data sets contain very limited information about the presence of mental health conditions and the use of mental health services. Linking national maternity and mental health data offers an important opportunity to examine the care that women with perinatal mental health conditions receive.

The aim of this report is to investigate the feasibility of using linked national data sets to assess perinatal mental health services. For this report, we only used Scottish data sources. The data sets include episodes of admission to secondary care, including hospital admission for perinatal mental health conditions. Data on care provided in the community or by general practitioners in primary care are not available. It is envisaged that the results based on Scottish data will inform future analyses of similar data from all nations of the UK.

Structure of this report

The report consists of three parts. First, we describe the data sets that were used and how they were linked. Second, we present our proposed method of grouping mental health diagnoses to describe secondary care admissions in women before pregnancy, during pregnancy, and in the first year after giving birth. The grouping was defined by creating diagnosis groups of women with mental health conditions who are similar with respect to their prognosis and treatment while limiting the number of diagnosis groups as much as possible. Third, we use the results of this preparatory work to demonstrate the clinical relevance of using linked data sets to describe the care that women with perinatal mental health services received, including key outcomes of their babies.

Based on the results presented in these three parts, we offer recommendations for organisations supplying and those requesting data extracts for the purpose of assessing practice and outcomes of perinatal mental health services as well as for national policy makers.

Data sources

The feasibility of evaluating perinatal mental health services using linked national maternity and mental health data was investigated using data for Scotland on births that took place between 1 April 2014 and 31 March 2017, and inpatient admissions for mental health conditions between 1 April 2000 and 31 March 2018.

For this report, we used the Scottish data sources described below. Specific data sets on mental health services in Wales were not yet available at the time of this study.

Scottish Morbidity Record (SMR) data include information on admissions to secondary care, including hospital admissions for perinatal mental health conditions that are deemed severe enough to require a hospital admission. Data on care for less severe diagnoses, provided by general practitioners or community psychiatry services, were not available for this report. Therefore, it was only possible to include women with mental health conditions deemed severe enough that care in a secondary care facility was necessary.

Data

The Scottish Information Services Division* (ISD) provided the following data sets to the NMPA (Table 1):

- National Records of Scotland (NRS): Any birth that occurs in Scotland must be registered within 21 days by the Registrar of Births, Deaths and Marriages. The NRS gives the most reliable and accurate measure of the number of births in Scotland.
- Scottish Birth Record (SBR): This is a web-based data set that includes a record completed for all babies, including those who are stillborn, with information about gestational age at birth, birthweight, congenital anomalies and discharge details, covering care received during the antenatal period, birth and the first year of life. Data have been collected since 1975.
- SMR-02 – Maternity Inpatient and Day Case data set: This data set includes information on pregnancy and birth, submitted to the ISD when mothers are discharged from hospital after the birth of their baby. Data have been collected since 1981.
- SMR-01 – General/Acute Inpatient and Day Case data set for the mother: This data set includes episode-level records of hospital inpatient and day-case discharges from acute specialties, with administrative, diagnostic and procedure information. It can include records of admissions to psychiatric wards in a general/acute hospital. Data have been collected since 1981.
- SMR-04 – Mental Health Inpatient and Day Case data set: This data set includes episode-level records of psychiatric inpatient and day-case admissions. It can include records of admissions to psychiatric wards in a general/acute hospital or some care homes. Data have been collected since 1981. It does not include data on care provided by psychiatric outpatient or community care services, or by primary care services.

* The Information Services Division is a division of National Services Scotland, part of NHS Scotland.

Table 1 Scottish data sets used in this report

Database	Unique identifier	Description
National Records of Scotland (NRS)	Mother ID and baby ID	Records of births, deaths, marriages, civil partnerships, divorces and stillbirths; used as the 'spine' (the data set against which all other data sets were linked)
Maternity Inpatient and Day Case (SMR-02)	Mother ID and baby ID	Episode-level data since 1981 for a woman's maternity information, including information on mother and baby characteristics, birthweight, gestational age, mode of delivery, induction of labour, outcome of pregnancy and place of birth
Scottish Birth Record (SBR)	Baby ID	Episode-level data on babies discharged from hospital, supplementary to a woman's delivery information (SMR-02)
General/Acute Inpatient and Day Case (SMR-01): mother records	Mother ID	Episode-level data since 1981 on hospital inpatient and day-case discharges from acute specialties
General/Acute Inpatient and Day Case (SMR-01): baby records	Baby ID	Episode-level data since 1981 on hospital inpatient and day-case discharges from acute specialties
Mental Health Inpatient and Day Case (SMR-04)	Mother ID	Episode-level data since 1981 on patients that are receiving care at psychiatric hospitals at the point of both admission and discharge

Data linkage

A birth cohort was identified, using birth records in NRS and SMR-02. Mothers who had given birth during this period were then linked to the other databases. Data linkage is performed by the ISD using the individual CHI number and date of birth. The ISD creates the link using both deterministic and probabilistic matching to ensure accuracy, minimise discrepancies and identify duplicate entries (Figure 1).[15,16] The quality of the linked data sets is regularly checked. Completeness is estimated to be in excess of 98%.[*]

[*] www.isdscotland.org/products-and-Services/Data-Support-and-Monitoring/SMR-Completeness

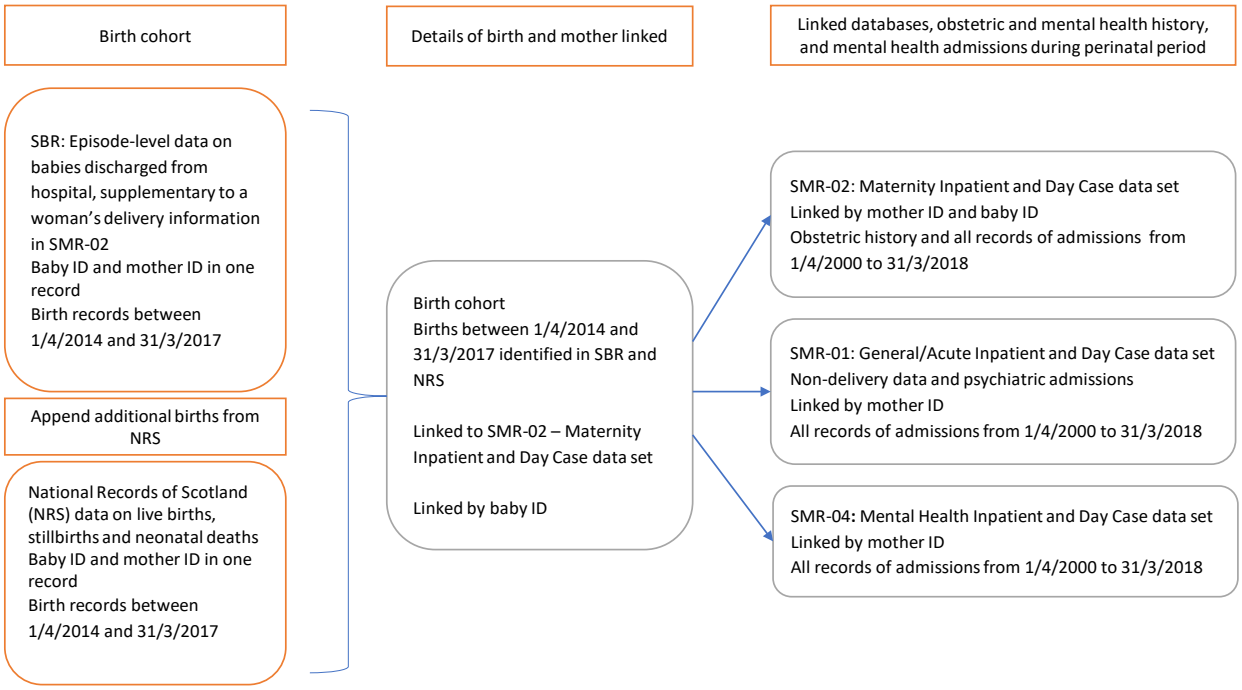


Figure 1 Data sources and overview of linkage

Births

Using data from the NRS, SBR and SMR-02, 163 109 births* that took place between 1 April 2014 and 31 March 2017 were identified (Table 2). Of total births in the NRS, 98.3% were identified in the SMR-02. The births that were not identified in the SMR-02 (and not included in the data linkage) include home births, births in non-NHS hospitals, and incomplete data submissions from maternity units.†

The 163 109 births relate to 151 820 women and to 165 637 babies. 11 007 women (7.3%) were included twice and 141 women (0.1%) were included three times. In this report, we describe the results according to the total number of births, meaning that 11 148 women were included more than once.

Table 2 Number of mothers, babies and births[a] reported between 1 April 2014 and 31 March 2017

Year of birth	Women who gave birth	Total babies born	Births[a]		
			Singleton births	Multiple births	Total births
2014–2015	50 819	56 146	54 373	905	55 278
2015–2016	51 956	55 210	53 543	847	54 390
2016–2017	49 045	54 281	52 624	817	53 441
All	151 820	165 637	160 540	2 569	163 109

[a] Births are counted as one event, irrespective of whether they were singleton or multiple births.

* Throughout this report, births are counted as one event, irrespective of whether they were singleton or multiple births.

† www.isdscotland.org/Health-Topics/Maternity-and-Births/Births

Mental health admissions

To identify women who had a mental health admission, SMR-02 data of all women who gave birth within the study period (2014–2017) were linked to SMR-04 data as well as to any admission recorded in SMR-01 with a diagnosis code from Chapter V ('Mental and behaviour disorders') of the International Classification of Diseases, 10th Revision (ICD-10) (Table 3). The main mental health diagnosis codes recorded in SMR-04 can also come from other ICD-10 chapters (e.g. Chapter XXI: 'Factors influencing health status and contact with health services'). However, if a code from ICD-10 Chapter V was also available, this code was used instead to group the woman's mental health diagnosis. The main discharge diagnosis code was used as the primary diagnosis for each episode. Women may have admissions from both SMR-01 and SMR-04 for separate admissions as well as for combined admissions (e.g. admission to a specialist psychiatric ward immediately following an admission to a general/acute hospital).

Given the diagnostic codes available in the linked data sets, we use the same terms that have been used in the ICD-10 categories. However, we acknowledge that there may be more preferable terms that can be used to describe specific conditions. For example, we use the term 'personality disorder' (ICD-10 F60) to describe a group of conditions that may be better described as 'complex post-traumatic stress disorder'.

Table 3 International Classification of Disease, 10th Revision, Chapter V: 'Mental and behavioural disorders'

Code	Primary diagnosis category	Includes the following conditions
F00–F09	Organic mental disorders	Dementia, delirium, mental disorders due to brain damage
F10–F19	Mental disorders due to psychoactive substance use	Disorders due to use of psychoactive substances
F20–F29	Schizophrenia, schizotypal and delusional disorders	Schizophrenia, psychotic disorders, schizoaffective disorders
F30–F39	Mood (affective) disorders	Depression, mania, bipolar disorder
F40–F49	Neurotic and stress-related disorders	Anxiety disorders, obsessive-compulsive disorder (OCD), post-traumatic stress disorder, hypochondria, dissociative disorders
F50–F59	Behavioural syndromes associated with physiological disturbances	Eating disorders, sleep disorders, sexual dysfunction
F60–F69	Disorders of adult personality and behaviour	Personality disorders, impulse disorders
F70–F79	Intellectual disability	Mild, moderate and severe intellectual disability
F80–F89	Disorders of psychological development	Autism, speech disorders, dyspraxia, developmental dyslexia
F90–F99	Behavioural and emotional disorders with onset in childhood	Attention deficit and hyperkinetic disorders, conduct disorders, tic disorders

For the purpose of this feasibility study, mental health admissions were described according to the time they occurred relative to a birth**:**

- **prepregnancy**: a mental health inpatient admission that occurred at any time before pregnancy; this indicates that a woman had a prepregnancy history of mental health admission
- **during pregnancy**: a mental health inpatient admission during pregnancy
- **during the first postnatal year**: a mental health inpatient admission in the first year after giving birth.

In this report, a 'perinatal mental health admission' is a mental health admission that occurred during pregnancy or in the first year after giving birth. The onset of pregnancy was considered to be 39 weeks before birth because gestational age was not always available.

Figure 2 shows a flow diagram for the whole cohort of the 163 109 included births. We found a prepregnancy mental health admission for 3043 (1.9%). In 176 (5.8%) of these 3043 births, the woman was also admitted during the perinatal period. Of these 176 admissions, 57 (32.4%) happened during pregnancy and 119 (67.6%) in the first year after giving birth. For the 160 066 births without a prepregnancy mental health admission, we identified a perinatal mental health admission in 414 (0.3%). Of these 414 admissions, 78 (18.8%) happened during pregnancy and 336 (81.2%) in the first year after giving birth. Table 4 breaks down the postnatal admissions by timing of first admission: early (0 to 12 weeks) or late (13 to 52 weeks).

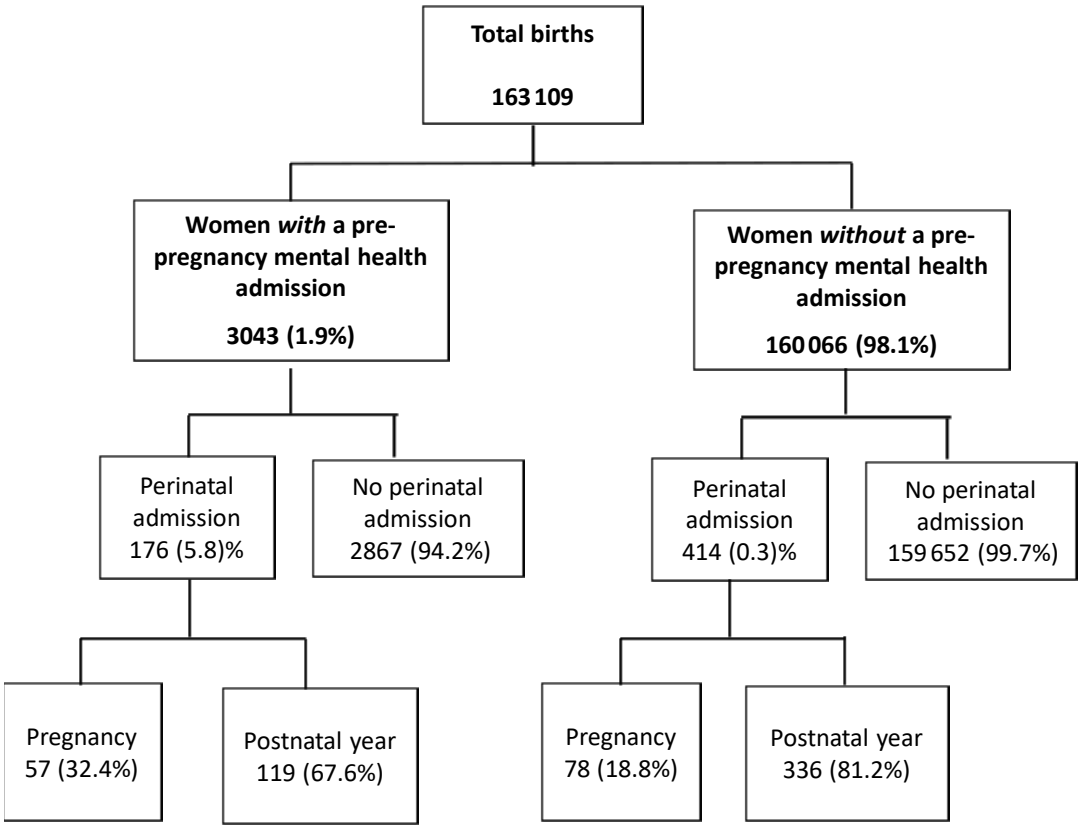


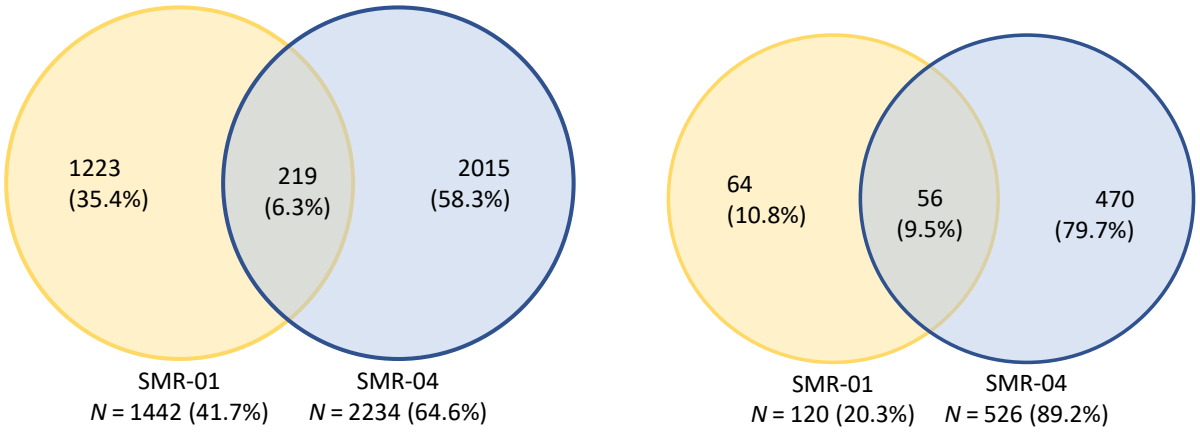
Figure 2 Flow diagram of cohort

Table 4 Number and proportions of births by prepregnancy mental health admission and timing of the perinatal mental health admission

	Number	Births to women with a perinatal mental health admission[a]	
Births to women *with* a prepregnancy mental health admission	3 043		176 (5.8%)
		During pregnancy[a]	57 (32.4%)
		First year after giving birth[a]	119 (67.6%)
		0 to 12 weeks	51 (42.9%)
		13 to 52 weeks	68 (57.1%)
Births to women *without* a prepregnancy mental health admission	160 066		414 (0.3%)
		During pregnancy[a]	78 (18.8%)
		First year after giving birth[a]	336 (81.2%)
		0 to 12 weeks	129 (38.4%)
		13 to 52 weeks	207 (61.6%)
All births	163 109		590 (0.4%)
		During pregnancy[a]	135 (22.9%)
		First year after giving birth[a]	455 (77.1%)
		0 to 12 weeks	180 (39.6%)
		13 to 52 weeks	275 (60.4%)

[a] First perinatal mental health admission only.

Figure 3 shows the number of mental health admissions identified in the two data sets (SMR-01 and SMR-04). Of the 3457 births identified in women who had a mental health admission, 2234 women (64.6%) had an admission recorded in SMR-04 and 1223 women (35.4%) had a mental health admission only identified in SMR-01. These proportions are slightly different if only the 590 births with a perinatal mental health admission are considered. For these admissions, just 64 (10.8%) had a mental health admission only identified in SMR-01. It is possible that mental health admissions only identified in SMR-01 are different from those recorded in SMR-04 as the former reflect admissions to acute hospitals. In this report, we use the diagnosis from SMR-04 if the mental health admission was recorded in both SMR-01 and SMR-04.



Births with a record of a mental health admission (either prepregnancy or perinatal), *N* = 3457

Births with a record of a perinatal mental health admission, *N* = 590

Figure 3 Mental health admissions recorded in maternity inpatient records (SMR-01), mental health inpatient records (SMR-04)

Maternal characteristics

Maternal characteristics for the 590 births in women with a perinatal mental health admission are presented in Table 5. Women without a prepregnancy mental health admission (414 out of 590; 70.2%) were of similar age (28.5 years compared with 30.4 years) and more often primiparous (49.0% compared with 38.1%) than the 176 women with a prepregnancy mental health admission. In the women with a prepregnancy mental health admission, the average time interval between the most recent mental health admission and the birth was slightly shorter than 4 years.

Table 5 Maternal characteristics of the 590 births in women with a perinatal mental health admission

	Women *with* a prepregnancy mental health admission	Women *without* a prepregnancy mental health admission
Number of births in women with a perinatal mental health admission	176	414
Maternal age at time of birth (mean years ± SD)	30.4 ± 6.1	28.5 ± 6.1
Number with missing age information	*4*	*0*
For women with a prepregnancy admission, time interval between most recent prepregnancy mental health admission and birth (mean years ± SD)	3.9 ± 3.2	N/A
Number and proportion of primiparous mothers	67 (38.1%)	203 (49.0%)

Grouping of mental health diagnoses relevant for perinatal mental health

A grouping of mental health diagnoses was developed that can be used to describe the mental health admissions. The aim of this grouping was to create diagnosis groups of women who have mental health conditions that are similar with respect to their prognosis and treatment (to maximise clinical relevance) and to limit the number of diagnosis groups that need to be considered (to maximise statistical power). Detailed ICD-10 coding information is provided in Appendix 1.

The Advisory Group revised a previously published grouping used to identify factors associated with mental health hospital admissions around the time of birth.[17] That grouping distinguished three main diagnosis groups:

1 non-affective psychosis (e.g. schizophrenia)

2 acute non-schizophrenic and affective psychoses (e.g. bipolar affective disorder and postpartum psychosis)

3 major depressive disorder (e.g. non-psychotic depression, depressive episodes and postpartum depression).

The grouping created by the Advisory Group was further informed by preliminary analyses of the frequencies of the admissions according to their timing (prepregnancy or perinatal). In addition to the three main diagnosis groups, groups were created to describe other diagnoses:

4 mental and behavioural disorders due to psychoactive substance use

5 anxiety disorders

6 eating disorders

7 personality disorders

8 a group with all other diagnostic codes in ICD-10 Chapter V, which includes codes thought to be less relevant for perinatal mental health.

A summary of all the diagnoses included in each of the groups is given in Table 6, and a complete list of the ICD-10 codes included (and excluded) from each group is provided in Appendix 1.

Table 6 Diagnosis groups according to ICD-10 codes used to describe perinatal mental health admissions

Diagnostic group	ICD-10 diagnostic codes included	
Group 1: Schizophrenia and other non-affective psychoses	F20	Schizophrenia
	F21	Schizotypal disorder
	F22	Persistent delusional disorders
	F23	Acute and transient psychotic disorders is included, except non-specific disorders
	F24	Induced delusional disorder
	F25	Schizoaffective disorders, except for mixed and manic types which are more suitable for Group 2 definitions
	F28	Other nonorganic psychotic disorders
	F29	Unspecified nonorganic psychosis
Group 2: Affective psychoses, including postpartum psychosis	F23.0	Acute polymorphic psychotic disorder without symptoms of schizophrenia
	F23.8	Other acute and transient psychotic disorders
	F23.9	Acute and transient psychotic disorders unspecified
	F25.0	Schizoaffective disorder, manic type
	F25.2	Schizoaffective disorder, mixed type
	F30	Manic episode
	F31	Bipolar affective disorder
	F32.3	Severe depressive episode with psychotic symptoms
	F33.3	Recurrent depressive disorder, current episode severe with psychotic symptoms
	F53.1	Severe mental and behavioural disorders associated with the puerperium, not elsewhere classified
Group 3: Major depressive disorders, including postpartum depression	F31.3	Bipolar affective disorder, current episode mild or moderate depression
	F31.4	Bipolar affective disorder, current episode severe depression without psychotic symptoms
	F32	Depressive episode (modification)
	F33	Recurrent depressive disorder (modification)
	F53.0	Postpartum depression
Group 4: Psychoactive substance use	F10–F19	Mental disorders due to alcohol, licit and illicit drugs and psychoactive substances
Group 5: Anxiety disorders and post-traumatic stress disorder	F41	Other anxiety disorders,
	F42	Obsessive-compulsive disorder
	F43	Reaction to severe stress including post-traumatic stress disorder
Group 6: Eating disorders	F50	Eating disorders
Group 7: Personality disorders	F34.0	Cyclothymia
	F34.1	Dysthymia
	F60	Specific personality disorders
Group 8: Other disorders	All other mental and behavioural disorders codes:	
	F00–F09	Organic, including symptomatic, mental disorders
	F70–F79	Mental retardation
	F80–F89	Disorders of psychological development
	F90–F98	Behavioural and emotional disorders with onset usually occurring in childhood and adolescence

Table 7 shows that, for the 590 births observed in women who had a perinatal mental health admission, major depressive disorders including postpartum depression (Group 3) were the most frequently observed diagnoses (22.9%). Anxiety and post-traumatic stress disorders (Group 5) were the next most common (19.3%). However, if only the 176 births in women with a prepregnancy mental health admission were considered, perinatal mental health diagnoses related to psychoactive substance use (Group 4) were the most frequently observed (25.0)%.

Table 7 Diagnosis groups according to ICD-10 codes for 590 births with a perinatal mental health admission[a] according to the mental health history

	All births in women with a perinatal mental health admission	Births in women *without* a prepregnancy mental health admission	Births in women *with* a prepregnancy mental health admission
All	590	414	176
Group 1: Schizophrenia and other non-affective psychoses	31 (5.3%)	11 (2.7%)	20 (11.4%)
Group 2: Affective psychoses, including postpartum psychosis	71 (12.0%)	48 (11.6%)	23 (13.1%)
Group 3: Major depressive disorders, including postpartum depression	135 (22.9%)	96 (23.2%)	39 (22.2%)
Group 4: Psychoactive substance use	74 (12.5%)	30 (7.2%)	44 (25.0%)
Group 5: Anxiety disorders and post-traumatic stress disorder	114 (19.3%)	97 (23.4%)	17 (9.7%)
Group 7: Personality disorders	54 (9.2%)	45 (10.9%)	9 (5.1%)
Group 6: Eating disorders **Group 8**: Other disorders (with eating disorders included)	111 (18.8%)	87 (21.0%)	24 (13.6%)

Groups 6 and 8 combined owing to small numbers.

[a] First perinatal admission (during pregnancy or within the first year after giving birth).

We also explored the agreement between perinatal mental health diagnosis groups and diagnosis groups for the most recent prepregnancy mental health diagnosis (Table 8) and the first perinatal admission, for those women with both a prepregnancy admission and a perinatal admission.

Overall, 77 (43.8%) of the 176 births had a diagnosis in the perinatal mental health admission that was the same as the one in the most recent prepregnancy mental health admission. The agreement was lowest (20.5%) for births in women who had a history of a prepregnancy mental health admission for a major depressive disorder (Group 3) and highest (59.1%) for births in women who had a prepregnancy mental health admission related to psychoactive substance use (Group 4).

Table 8 Agreement between the prepregnancy and perinatal mental health diagnosis groups in the 176 births in women with both prepregnancy and a perinatal admission

Mental health diagnosis in first perinatal mental health admission	Mental health diagnosis in most recent prepregnancy mental health admission						
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6, 7 and 8	All
All	18	26	18	33	20	61	176
Group 1: Schizophrenia and other non-affective psychoses	**10 (50%)**						20
Group 2: Affective psychoses, including postpartum psychosis		**9 (39%)**					23
Group 3: Major depressive disorders, including postpartum depression			**8 (21%)**				39
Group 4: Psychoactive substance use				**26 (59%)**			44
Group 5: Anxiety disorders and post-traumatic stress disorder					**7 (41%)**		17
Group 6: Eating disorders Group 7: Personality disorders Group 8: Other disorders						**17 (52%)**	33

Only the numbers of births in those women who had the same diagnosis at both admissions are shown.
Groups 6, 7 and 8 combined owing to small numbers.

Finally, Table 9 shows that the frequencies of mental health diagnosis groups varied according to timing of the perinatal mental health admissions. For example, anxiety disorders and post-traumatic stress disorder (Group 5) were the most frequent (22.2%) of all admissions during pregnancy, whereas major depressive disorders (Group 3) occurred in 29.4% in the early postpartum period (the first 12 weeks) and in 23.6% in the later postpartum period (between 13 and 52 weeks).

Table 9 Diagnoses recorded in the perinatal mental health admissions according to timing of the admission

Mental health diagnosis in first perinatal mental health admission[a]	All admissions	Admissions during pregnancy	Admissions between 0 and 12 weeks after giving birth	Admissions between 13 and 52 weeks after giving birth
All	590	135	180	275
Group 1: Schizophrenia and other non-affective psychoses	31 (5.3%)	15 (11.1%)	3 (1.7%)	13 (4.7%)
Group 2: Affective psychoses, including postpartum psychosis	71 (12.0%)	5 (3.7%)	35 (19.4%)	31 (11.3%)
Group 3: Major depressive disorders, including postpartum depression	135 (22.9%)	17 (12.6%)	53(29.4%)	65 (23.6%)
Group 4: Psychoactive substance use	74 (12.5%)	24 (17.8%)	9 (5.0%)	41 (14.9%)
Group 5: Anxiety disorders and post-traumatic stress disorder	114 (19.3%)	30 (22.2%)	38 (21.1%)	46 (16.7%)
Group 7: Personality disorders	54 (9.2%)	20 (14.8%)	8 (4.4%)	26 (9.5%)
Group 6: Eating disorders Group 8: Other disorders	111 (18.8%)	24 (17.8%)	34 (18.9%)	53 (19.3%)

Groups 6 and 8 combined owing to small numbers.

[a] First perinatal admission (during pregnancy or within the first year after giving birth).

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Outcomes

As an illustration of the clinical relevance of linking maternity and mental health data sets, this chapter describes outcomes for all births (*n* = 163 109), for births in women without any prepregnancy mental health admissions (*n* = 160 066), for births in women with prepregnancy mental health admissions (*n* = 3043), and for births in women who experienced a perinatal mental health admission (*n* = 590). The following key outcomes were available in the data:

- number of stillbirths
- emergency caesarean section
- Apgar score < 7 at 5 minutes
- preterm birth (gestational age at birth < 37 weeks)
- low birthweight (< 2500 g) in term babies.

Table 10 shows outcomes of births in women with and without a history of a prepregnancy mental health hospital admission. For example, the preterm birth rate (gestational age < 37 weeks) was 12.0% in women with a history of prepregnancy mental health admission compared with 7.1% in women without a prepregnancy mental health admission. Similarly, 4.3% of term babies born to women with a history of prepregnancy mental health admissions had a birthweight lower than 2500 g compared with 2.0% in women without a prepregnancy mental health admission. Also, the frequency of babies born with a low Apgar score (defined as < 7 at 5 minutes of age) was 2.5% in women with a history of prepregnancy mental health admission compared with 1.6% in women without a previous mental health admission. However, rates of stillbirth and of emergency caesarean section did not appear to be different. It should be noted that these results have not been adjusted for additional differences that may exist between the comparison groups.

The outcomes of the 590 births of the women with a perinatal mental health admission were similar to those observed for births of women with a prepregnancy mental health admission. The only notable exception was that the caesarean section rate for babies of women with a perinatal mental health admission was slightly increased (19.5% compared to 16.8%.)

Table 10 Outcomes of births in women with and without a history of a prepregnancy mental health hospital admission

	All births	Births in women *without* a prepregnancy mental health admission	Births in women *with* a prepregnancy mental health admission	Births in women with a perinatal mental health admission
All	163 109	160 066	3 043	590
Stillbirth	556 (0.3%)	548 (0.3%)	8 (0.3%)	–[a]
Emergency caesarean section	27 236 (16.7%)	26 724 (16.7%)	512 (16.8%)	115 (19.5%)
Gestational age at birth (weeks^{+days})				
Missing	*4 261*	*4 196*	*65*	*19*
Term (≥ 37 weeks)	147 483 (92.8%)	144 861 (92.9%)	2 622 (88.0%)	503 (88.1%)
32 to 36^{+6} weeks	9 746 (6.1%)	9 448 (6.1%)	298 (10.0%)	59 (10.3%)
< 32 weeks	1 619 (1.0%)	1 561 (1.0%)	58 (1.9%)	9 (1.6%)
Low birthweight (< 2500 g) in term babies	3 051 (2.1%)	2 939 (2.0%)	112 (4.3%)	22 (4.4%)
Missing	*232*	*229*	*3*	*3*
Apgar score < 7 at 5 minutes	2 665 (1.7%)	2 589 (1.7%)	76 (2.6%)	17 (3.0%)
Missing	*5 727*	*5 603*	*124*	*30*

Percentages are calculated in births with non-missing data.

[a] Omitted because of frequency < 5.

Although not an outcome in the strict sense, we also present here the type of unit where the mothers who had a perinatal mental health admission were admitted to as a further illustration of the clinical relevance of the linked data sets. A key recommendation of national guidelines is that inpatient psychiatric mother-and-baby units (MBUs) are available to support mothers with a mental health condition. We found that the frequency with which mothers who had a perinatal mental health admission were admitted to an MBU depended on the timing of the admission (Table 11). Admission to an MBU was most frequent in women who had a mental health admission in the first 12 weeks after giving birth (79.5%) and considerably less frequent in women who had a mental health admission between 13 and 52 weeks (38.1%).

Table 11 Ward type for perinatal mental health admissions according to the timing of the admission[a]

Unit type	All births	Births in women with a mental health admission during pregnancy	Births in women with a mental health admission between 0 and 12 weeks after giving birth	Births in women with a mental health admission between 13 and 52 weeks after giving birth
All admissions	590	135	180	275
Missing	*58*	*21*	*9*	*28*
Acute ward (not an MBU)	395 (74.2%)	107 (93.9%)	97(56.7%)	191 (77.3%)
MBU	257 (48.3%)	27 (23.7%)	136 (79.5%)	94 (38.1%)

MBU = inpatient psychiatric mother-and-baby unit.

Percentages are calculated in births with non-missing data.

[a] Admissions to each type of ward (not exclusive categories).

Summary, discussion and conclusions

This feasibility study demonstrates that linkage of routinely available health data can be used to identify women who experienced a mental health hospital admission in the perinatal period or prior to pregnancy in Scotland.

Owing to the use of the CHI number in all Scottish health data sets, the quality of data linkage is high, so the rate of missed links (which would have reduced the number of women identified with a perinatal mental health admission) and the rate of false links (which would have increased this number) are relatively small.

A grouping of mental health diagnosis was created that identified eight specific groups and aimed to bring together diagnoses with similar clinical implications while avoiding creating groups with small numbers. It is important to note that the group including diagnoses related to eating disorders is small whereas the group including the 'other diagnoses' (thought to be unrelated to perinatal mental health) is relatively large, which highlights that this grouping may need to be further adjusted to make it fit for purpose depending on the specific context and objectives of future studies and evaluations.

It is important to note that perinatal mental health conditions that were identified in this report only reflect the most severe mental health conditions, because they were identified in women admitted to secondary care. Therefore, it is not surprising that a recent overview quoted point prevalence figures between 3% and 5% for major depressive disorders during pregnancy in the immediate postpartum period.[3] Also, the corresponding figures are 0.4% for psychotic disorders and 2.8% for bipolar disorders.[4]. This highlights the importance of exploring the possibility of linking with data sets that include records of mental health care provided in the community, such as the data set collected for the Improving Access to Psychological Therapies (IAPT) programme, available in England,* or primary care data.

To illustrate the clinical relevance of these linked national data sets, we described a number of birth outcomes according to whether or not the mother had had a prepregnancy mental health admission and/or a mental health admission in the perinatal period. We found that in babies of women who had been admitted for mental health issues before or during the perinatal period, the risks of a preterm birth, a low birthweight or the baby needing medical attention was substantially increased. Also, we demonstrated that linked data could be used to investigate in what type of unit women who had a perinatal mental health admission were treated.

Linked national data sets are a key resource to evaluate the impact of existing national initiatives for reducing geographical variations in provision of perinatal mental health services in Scotland[9] as well as in England,[13] Wales[10] and Northern Ireland.[18] Similarly, the linked data will allow an evaluation of initiatives to increase the availability of specialist multidisciplinary perinatal community services and MBUs.

* www.england.nhs.uk/mental-health/adults/iapt

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Appendix 1
Diagnosis groups showing modification of the original ICD-10 codes

Diagnostic group	Conditions included in each group	Excluded
Group 1: Schizophrenia and other non-affective psychoses	This group is F20–F29, Schizophrenia, Schizotypal and delusional disorders, with some modifications. F20 Schizophrenia F20.0, F20.1, F20.2, F20.3, F20.5, F20.6, F20.8, F20.9 F21 Schizotypal disorder F22 Persistent delusional disorders F22.0, F22.8, F22.9 F23 Acute and transient psychotic disorders (ATPD), is included, except non-specific disorders F23.1 Acute polymorphic psychotic disorder with symptoms of schizophrenia F23.2 Acute schizophrenia-like psychotic disorder F23.3 Other acute predominantly delusional psychotic disorders F24 Induced delusional disorder F25 Schizoaffective disorders include F25.1 Schizoaffective disorder, depressive type F25.8 Other schizoaffective disorders F25.9 Schizoaffective disorder, unspecified F28 Other nonorganic psychotic disorders F29 Unspecified nonorganic psychosis	The following diagnosis codes were excluded from Group 1 and added to Group 2 as they either stated 'without schizophrenia' or they were too broad a term to fulfil criteria for the more specific schizophrenia group; in addition, mixed and manic types were more suitable for Group 2 definitions: F23.0, F23.8, F23.9 because they specify 'without schizophrenia' or are unspecified psychotic disorders (not schizophrenia) F23.0 Acute polymorphic psychotic disorder without symptoms of schizophrenia, F23.8 Other acute and transient psychotic disorders F23.9 Acute and transient psychotic disorders unspecified F25.0 Schizoaffective disorder, manic type F25.2 Schizoaffective disorder, mixed type

Diagnostic group	Conditions included in each group	Excluded
Group 2: Affective psychoses including postpartum psychosis	This group includes acute non-schizophrenia-like and affective psychoses, including manic episodes, bipolar affective disorder and postpartum psychosis (but those relevant to depression are included in Group 3) F30 Manic episode F30.0 Hypomania F30.1 Mania without psychotic symptoms F30.2 Mania with psychotic symptoms F30.8 Other manic episodes F30.9 Manic episode, unspecified F31 Bipolar affective disorder F31.1 Bipolar affective disorder, current episode manic without psychotic symptoms F31.2 Bipolar affective disorder, current episode manic with psychotic symptoms F31.5 Bipolar affective disorder, current episode severe depression with psychotic symptoms F31.6 Bipolar affective disorder, current episode mixed F31.7 Bipolar affective disorder, currently in remission Depressive episodes with psychotic symptoms F32.3 Severe depressive episode with psychotic symptoms F33.3 Recurrent depressive disorder, current episode severe with psychotic symptoms 53.1 Severe mental and behavioural disorders associated with the puerperium, not elsewhere classified) F23.0 Acute polymorphic psychotic disorder without symptoms of schizophrenia, F23.8 Other acute and transient psychotic disorders F23.9 Acute and transient psychotic disorders unspecified F25.0 Schizoaffective disorder, manic type F25.2 Schizoaffective disorder, mixed type	The following diagnosis codes were excluded from Group 2 and added into Group 3 as they are codes primarily for a depression-related admission rather than relevant to bipolar disorder: F31.3 Bipolar affective disorder, current episode mild or moderate depression F31.4 Bipolar affective disorder, current episode severe depression without psychotic symptoms F53.0 Mild mental and behavioural disorders associated with the puerperium, not elsewhere classified is included into Group 3 Major depressive disorder non-psychotic depressive episode as it signifies postpartum depression (without psychoses) The following conditions were excluded from Group 2 and added to Group 8 as they either do not represent bipolar disorder or are too broad and unspecified: F31.0 Bipolar affective disorder, current episode hypomanic, F31.8 Other bipolar affective disorders and F31.9 Bipolar affective disorder, unspecified F53.9 Puerperal mental disorder, unspecified

Diagnostic group	Conditions included in each group	Excluded
Group 3: Major depressive disorders, including postpartum depression	Group 3 depression (includes non-psychotic depression, depressive episodes, recurrent depressive disorder, postpartum depression and bipolar affective disorder, with depression) and excludes those with psychotic symptoms (Group 2) F32 Depressive episode F32.0 Mild depressive episode F32.1 Moderate depressive episode F32.2 Severe depressive episode without psychotic symptoms F32.8 Other depressive episodes F32.9 Depressive episode, unspecified F33 Recurrent depressive disorder F33.0 Recurrent depressive disorder, current episode mild F33.1 Recurrent depressive disorder, current episode moderate F33.2 Recurrent depressive disorder, current episode severe without psychotic symptoms F33.4 Recurrent depressive disorder, currently in remission F33.8 Other recurrent depressive disorders F33.9 Recurrent depressive disorder, unspecified F31 Bipolar affective disorder (these codes included here rather than in Group 2 because they are codes primarily for a depression-related admission rather than relevant to bipolar disorder) F31.3 Bipolar affective disorder, current episode mild or moderate depression F31.4 Bipolar affective disorder, current episode severe depression without psychotic symptoms F53.0 Postpartum depression: mild mental and behavioural disorders associated with the puerperium, not elsewhere classified	The following diagnosis codes were excluded from Group 3 and added to Group 2: F32.3 Severe depressive episode with psychotic symptoms F33.3 Recurrent depressive disorder, current episode severe with psychotic symptoms

Diagnostic group	Conditions included in each group	Excluded
Group 4: Psychoactive substance use	Includes disorders due to use of: alcohol, licit and illicit drugs and psychoactive substances F10 Mental and behavioural disorders due to use of alcohol F11 Mental and behavioural disorders due to use of opioids F12 Mental and behavioural disorders due to use of cannabinoids F13 Mental and behavioural disorders due to use of sedatives or hypnotics F14 Mental and behavioural disorders due to use of cocaine F15 Mental and behavioural disorders due to use of other stimulants, including caffeine F16 Mental and behavioural disorders due to use of hallucinogens F17 Mental and behavioural disorders due to use of tobacco F18 Mental and behavioural disorders due to use of volatile solvents F19 Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances	No modifications to F10–F19 Mental disorders due to psychoactive substance use

Diagnostic group	Conditions included in each group	Excluded
Group 5: Anxiety disorders and post-traumatic stress disorder	This group includes Neurotic and stress-related disorders Anxiety disorders, Obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), F41 Other anxiety disorders F41.0 Panic disorder [episodic paroxysmal anxiety] F41.1 Generalised anxiety disorder F41.2 Mixed anxiety and depressive disorder F41.3 Other mixed anxiety disorders F41.8 Other specified anxiety disorders F41.9 Anxiety disorder, unspecified F42 Obsessive – compulsive disorder F42.0 Predominantly obsessional thoughts or ruminations F42.1 Predominantly compulsive acts [obsessional rituals] F42.2 Mixed obsessional thoughts and acts F42.8 Other obsessive – compulsive disorders F42.9 Obsessive – compulsive disorder, unspecified F43 Reaction to severe stress, and adjustment disorders F43.0 Acute stress reaction F43.1 post-traumatic stress disorder F43.2 Adjustment disorders F43.8 Other reactions to severe stress F43.9 Reaction to severe stress, unspecified	The following diagnosis codes were excluded from Group 5 and added to Group 8 ('Other disorders') as they are disorders not associated with the perinatal period: F40 Phobic anxiety disorders F44 Dissociative [conversion] disorders F45 Somatoform disorders F48 Other neurotic disorders

Diagnostic group	Conditions included in each group	Excluded
Group 6: Eating disorders	This group includes only F50 Eating disorders F50 Eating disorders F50.0 Anorexia nervosa F50.1 Atypical anorexia nervosa F50.2 Bulimia nervosa F50.3 Atypical bulimia nervosa F50.4 Overeating associated with other psychological disturbances F50.5 Vomiting associated with other psychological disturbances F50.8 Other eating disorders F50.9 Eating disorder, unspecified	The following diagnosis codes were excluded from Group 6 and added to Group 8 ('Other disorders'): F51 Nonorganic sleep disorders F52 Sexual dysfunction, not caused by organic disorder or disease F53 Mental and behavioural disorders associated with the puerperium, not elsewhere classified F53.9 Puerperal mental disorder, unspecified F54 Psychological and behavioural factors associated with disorders or diseases classified elsewhere F55 Abuse of non-dependence-producing substances F59 Unspecified behavioural syndromes associated with physiological disturbances and physical factors
Group 7: Personality disorders	This group includes: F60 Specific personality disorders, F60 Specific personality disorders F60.0 Paranoid personality disorder F60.1 Schizoid personality disorder F60.2 Dissocial personality disorder F60.3 Emotionally unstable personality disorder F60.4 Histrionic personality disorder F60.5 Anankastic personality disorder F60.6 Anxious [avoidant] personality disorder F60.7 Dependent personality disorder F60.8 Other specific personality disorders F60.9 Personality disorder, unspecified F61 Mixed and other personality disorders F61.0 Mixed personality disorders F61.1 Troublesome personality changes In addition to F34 Persistent mood [affective] disorders F34.0 Cyclothymia F34.1 Dysthymia	The following diagnosis codes were excluded from Group 7 and added to Group 8 ('Other disorders'): F62 Enduring personality changes, not attributable to brain damage and disease F63 Habit and impulse disorders F64 Gender identity disorders F65 Disorders of sexual preference F66 Psychological and behavioural disorders associated with sexual development and orientation F68 Other disorders of adult personality and behaviour F69 Unspecified disorder of adult personality and behaviour

Diagnostic group	Conditions included in each group	Excluded
Group 8: Other disorders	All other conditions not thought to have an increased risk during the perinatal period are reported in this group: F00–F09 Organic, including symptomatic, mental disorders F70–F79 Mental retardation F80–F89 Disorders of psychological development F90–F98 Behavioural and emotional disorders with onset usually occurring in childhood and adolescence F31.0 Bipolar affective disorder, current episode hypomanic; F31.8 Other bipolar affective disorders; F31.9 Bipolar affective disorder, unspecified; F34.8 Other persistent mood [affective] disorders; F34.9 Persistent mood [affective] disorder, unspecified F38.0 Other single mood [affective] disorders; F38.1 Other recurrent mood [affective] disorders; F38.8 Other specified mood [affective] disorders F39 Unspecified mood [affective] disorder F40–F48 Neurotic, stress-related and somatoform disorders F40 Phobic anxiety disorders F44 Dissociative [conversion] disorders F45 Somatoform disorders F48 Other neurotic disorders F50–F59 Behavioural syndromes associated with physiological disturbances and physical factors F51 Nonorganic sleep disorders F52 Sexual dysfunction, not caused by organic disorder or disease F53 Mental and behavioural disorders associated with the puerperium, not elsewhere classified F53.9 Puerperal mental disorder, unspecified F54 Psychological and behavioural factors associated with disorders or diseases classified elsewhere F55 Abuse of non-dependence-producing substances F59 Unspecified behavioural syndromes associated with physiological disturbances and physical factors F62 Enduring personality changes, not attributable to brain damage and disease F63 Habit and impulse disorders F64 Gender identity disorders F65 Disorders of sexual preference F66 Psychological and behavioural disorders associated with sexual development and orientation F68 Other disorders of adult personality and behaviour F69 Unspecified disorder of adult personality and behaviour	