Maternal Exposure to Antidepressants and Psychiatric Outcomes Among Offspring in a National Birth Cohort (Prenatal SSRIs and offspring Psychiatric Outcome)

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Study Planned

Administrative details

EU PAS number

EUPAS33119

Study ID

33120

DARWIN EU® study

No

Study countries

☐ Finland

Study description

The overall objective of this project is to address novel research questions using comprehensive registry data in a large, national Finnish birth cohort on the relationship between use of selective serotonin reuptake inhibitor (SSRI) medications during pregnancy and psychiatric disorders from birth to age 21. The safety of SSRIs during pregnancy is a question of clear importance to patients and clinicians. The prevalence of major depression in pregnancy is 5-10%, and as many as 20% of pregnant women experience depressive symptoms. Gestational SSRI use has also been increasing in other countries, including Finland, where the proportion of pregnant women purchasing antidepressants increased significantly from 1996 to 2010. Given the particularly high prevalence of depression in women and the increasing use of SSRIs, more research is needed to investigate potential short- and long-term harms to the fetus. Only recently have studies attempted to investigate this issue in population-based birth cohorts. We have previously investigated relationships between maternal SSRIs and several neuropsychiatric outcomes, including depression, anxiety, autism spectrum disorder, attention deficit hyperactivity disorder, and speech/language disorders until 14 years' age. We shall extend the follow up until age 21, which will permit us to examine the risk trajectory of the previously observed increased risk of depression following maternal SSRI exposure and will markedly increase the sample size. The additional 7 years of follow-up, through adolescence and early adulthood, will permit us to examine whether the sharp rise in risk of the previously observed offspring depression continues into these age groups. This will also allow us to augment the sample of maternal SSRI-exposed subjects, for a total of estimated ~29,000 children born from 1996-2016.

Study status

Planned

Research institutions and networks

Institutions

University of Turku

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Institution

Columbia University, NY New York

Contact details

Study institution contact

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Study contact

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Primary lead investigator

Heli Malm

Primary lead investigator

Study timelines

Date when funding contract was signed

Actual: 31/10/2018

Study start date
Planned: 01/06/2020

Data analysis start date
Planned: 30/09/2020

Date of interim report, if expected
Planned: 31/03/2021

Date of final study report
Planned: 31/10/2022

Sources of funding

- Other

More details on funding

National Institute of Mental Health, U.S.

Regulatory

Was the study required by a regulatory body?

No

Is the study required by a Risk Management Plan (RMP)?

Not applicable

Methodological aspects

Study type

Study type list

Study type:

Non-interventional study

Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Main study objective:

To investigate the impact of antenatal SSRI exposure on offspring psychiatric disorders into early adulthood in a national birth cohort

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Anatomical Therapeutic Chemical (ATC) code

(N06A) ANTIDEPRESSANTS

ANTIDEPRESSANTS

(N06AB) Selective serotonin reuptake inhibitors

Selective serotonin reuptake inhibitors

Medical condition to be studied

Childhood depression

Pregnancy

Additional medical condition(s)

Antenatal depression, Offspring diagnoses of depression, anxiety, ADHD and autism spectrum disorders

Population studied

Age groups

- Preterm newborn infants (0 – 27 days)
- Term newborn infants (0 – 27 days)
- Infants and toddlers (28 days – 23 months)
- Children (2 to < 12 years)
- Adolescents (12 to < 18 years)
- Adults (18 to < 46 years)
- Adults (46 to < 65 years)

Special population of interest

Pregnant women

Estimated number of subjects

242000

Study design details

Outcomes

Offspring diagnosis of depression. Offspring diagnoses ofAnxiety disorders Autism spectrum disorder (ASD) Attention deficit hyperactivity disorder (ADHD) Tourette syndrome (TS) Speech, motor, and scholastic disorders

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Data analysis plan

To determine whether the sharp rise in risk of depression observed in our previous research (defined as register diagnoses of major depressive disorder/other depressive disorders) among maternal SSRI-exposed subjects at 12-14 years of age continues into older age groups, we will first visually examine plots of cumulative incidence functions with confidence bands (based on Kaplan-Meier estimators), then we will fit Cox regression models. We will then add interaction terms for the product of maternal exposure category and age (or a more general function of age, for example, a dichotomous indicator of onset age, treated as a time-dependent covariate) to Cox models. Significant ($p<0.05$) p-values for these product terms will suggest that the risk of depression associated with prenatal SSRI exposure varies by offspring age. We will estimate separate HRs for the association of maternal SSRI exposure with depression diagnosed before and after the median age of diagnosis.

Data management

ENCePP Seal

The use of the ENCePP Seal has been discontinued since February 2025. The ENCePP Seal fields are retained in the display mode for transparency but are no longer maintained.

Data sources

Data sources (types)

Administrative healthcare records (e.g., claims)

Drug dispensing/prescription data

Use of a Common Data Model (CDM)

CDM mapping

No

Data quality specifications

Check conformance

Unknown

Check completeness

Unknown

Check stability

Unknown

Check logical consistency

Unknown

Data characterisation

Data characterisation conducted

No