

Challenges in using administrative health databases for perinatal mental health research in Quebec

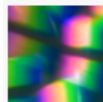
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Recent “shocks”

- ▶ In Quebec, the **legalization of cannabis** (2018) and the **COVID-19 pandemic** (2020) are recent events whose impacts on **perinatal mental health** outcomes at a population level need to be understood.

Legalization of cannabis

- ▶ Little is known about how the **legalization of cannabis** for recreational purposes may modify **substance use or substance-related disorders** during the perinatal period:
 - Colorado, USA: increase (69%) in concentration of cannabinoids in offspring meconium following legalization (Jones et al., 2015).
 - BC: after legalization, significant increases in cannabis use before pregnancy and non-significant increases in cannabis use during pregnancy (Bayrampour et al., 2021).

COVID-19 pandemic

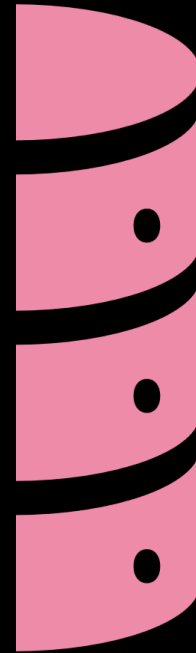
- ▶ Evidence suggests that **perinatal mental health** has been significantly affected by the **COVID-19 pandemic**:
 - Across Canada (QC, 3%): clinically elevated symptoms of anxiety (56.6%) and depression (37.0%) among pregnant individuals; higher than pre-COVID-19 cohorts (Lebel et al., 2021 – online survey).
 - ON: Higher rates of visits for diagnoses of anxiety, depressive, and alcohol or substance use disorders from April-November 2020 than expected (Vigod et al., 2021 – population-based using health administrative databases).
 - QC: ‘pandemic’ pregnant women had more psychological distress and psychiatric symptoms than ‘pre-pandemic’ pregnant women (Berthelot et al., 2020 – online survey).

Administrative health databases

- ▶ Holds tremendous potential for public health research and action:
 - Data collected for health care management and monitoring purposes (e.g., physician billing claims)... with applications to research and surveillance (Hinds et al., 2016).
 - **Strengths:** large, population-based data (*minimizing selection bias*); routinely and independently collected (*reducing recall bias and non-response*); already available (*lowering data collection costs*); allows for comparison of basic parameters (e.g., sex, age) across *space and time* – [*natural experiments!*]. (Allison et al., 2017; Blais et al., 2014; Schmidt et al., 2022; Suissa and Garbe, 2007; Thygesen and Ersbøll, 2014).
 - **Limitations:** misclassification error in diagnoses (*validation procedures needed*); key information might be omitted (e.g., *confounders*); truncation at the beginning; data limited to *users of healthcare services* (e.g., those who consulted a physician) (Allison et al., 2017; Blais et al., 2014; Schmidt et al., 2022; Suissa and Garbe, 2007; Thygesen and Ersbøll, 2014).

The Quebec Integrated Chronic Disease Surveillance System (QICDSS)

- ▶ Quebec's public health system covers ~ 98% of the population.
- ▶ QICDSS is updated annually, covering since January 1, 1996, and **linking five databanks**.
- ▶ Allows the surveillance of several chronic disease, *including* mental and substance-related disorders.
- ▶ The QICDSS is managed by the **Institut national de santé publique du Québec (INSPQ)**.



Health insurance registry (RAMQ)

Demographic, geographic and administrative information.



Hospitalization (MED-ÉCHO)

Admission to discharge at Quebec hospitals, including diagnoses and procedures (ICD/CCP codes).



Vital statistics

Date, primary cause of death (ICD codes) and contributing factors.



Physicians' claims

Services provided, including ICD codes and location.



Drug insurance claims

Prescription drug and health professional data (mainly population aged 65+).

Some published works on the QICDSS

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Quebec Integrated Chronic Disease Surveillance System (QICDSS), an innovative approach

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Chronic Disease
SURVEILLANCE

Number 6

Surveillance of Mental Disorders in Québec:
Prevalence, Mortality and Service Utilization Profile

Drug and Alcohol REVIEW



Drug and Alcohol Review (May 2021), 40, 662-672
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Using administrative health data to estimate prevalence and mortality rates of alcohol and other substance-related disorders for surveillance purposes

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The research projects...

- ▶ We had access to the QICDSS through a collaborative work with Victoria Massamba and Chris Huynh at the INSPQ.
- ▶ Currently, we are working on two projects:
 1. A mixed-methods study aimed at understanding how **cannabis use among pregnant women in Quebec has evolved** with attention to their individual and partners' behaviors, health system factors, and the **legalization of cannabis**.
 2. Exploring the **temporal and spatial variations of mental and substance-related disorders** in different populations of Quebec (including **pregnant women**), with attention to the **legalization of cannabis** and the **COVID-19 pandemic**.

The challenges...

1. Building collaborative partnerships (INSPQ – researchers):
 - The research project must fit **the INSPQ's surveillance mandate**.
 - **Co-development** of a research project (e.g., purpose, data and methods to be used).
 - **Formal/legal agreement** between participating institutions (i.e., INSPQ and universities).

The challenges...

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2. Planned, supervised, and partial access to QICDSS:
 - A detailed **analysis plan**, with the operationalization of populations, diseases, and other factors to be studied must be developed and **approved**, before any data extraction. An iterative process...
 - These tasks are **supervised** by an officer at the INSPQ (e.g., Victoria Massamba).
 - **Data extraction** is not conducted directly, but by a statistician at the INSPQ – data security process.
 - **Random rounding** of extracted data is applied to reduce security risks – data security process.
 - **Communication** with the supervisor and the statistician is **fundamental**.

The challenges

3. Working with coding algorithms:

- Most relevant data are **stored as ICD/ICP codes** in QICDSS.
- Therefore, we must use a combination of ICD/ICP codes (i.e., **coding algorithms**) to identify certain **populations** (e.g., pregnant women) or to define the **diseases** under study.
- These **coding algorithms must be validated** to ensure accuracy and alignment to actual clinical practice (e.g., *how do physicians code depression when diagnosing a patient?*).
- Fortunately, there is already advanced work on this (e.g., Huynh et al., 2021; Leclerc et al., 2020).

Synthesizing

- ▶ The **QICDSS database** holds tremendous potential for public health research and action on perinatal mental health in Quebec.
- ▶ The characteristics of this database may allow us to explore **perinatal mental health at the population level**, for different regions of Quebec over time – capital to determine the impact of the legalization of cannabis and the COVID-19 pandemic.
- ▶ Working with the QICDSS is not without its **challenges**: *building a collaborative partnership; requiring the planned, supervised, and partial access to data; and handling coding algorithms.*

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Québec 

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Thank you!