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# First lifetime psychiatric admission in the postpartum period: A population-based comparison to women with prior psychiatric admission \*\*,\*\*\*



Inbal Shlomi Polachek, M.D. a,d, Kinwah Fung, M.Sc. b,c, Simone N. Vigod, M.D., M.Sc. a,b,c,d,\*

- <sup>a</sup> Women's College Hospital, 76 Grenville Street, Toronto, Ontario
- <sup>b</sup> Women's College Research Institute, 790 Bay Street, Toronto, Ontario
- <sup>c</sup> Institute for Clinical Evaluative Sciences, 155 College Street Suite 424, Toronto, Ontario
- <sup>d</sup> Department of Psychiatry, University of Toronto, 27 King's College Circle, Toronto, Ontario

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#### ABSTRACT

Objectives: To better understand women with a first lifetime psychiatric hospitalization in the postpartum period. Methods: We included all 1071 postpartum women in Ontario, Canada, with a psychiatric admission in the 1-year postpartum (2007–2012). We compared women with their first lifetime psychiatric admission to those with any prior psychiatric admission on demographic and clinical characteristics and on mental health physician visits, psychiatric emergency department (ED) revisits and psychiatric readmission within 1-year postdischarge. Results: Compared to women with prior admission, women with a first lifetime admission (n=537,59%) were less likely to have psychotic disorders (14% vs. 25%) and had shorter lengths of stay (13.6+/-12.7 vs. 18.9+/-27.8 days). Women with prior admission were at higher risk for ED revisits (44% vs. 32%, odds ratio = 1.63, 95% confidence interval = 1.26-2.09) and readmissions (32% vs. 24%, odds ratio = 1.82, 95% confidence interval = 1.39-2.38) by 1-year postdischarge versus women with first lifetime admission; differences were explained by clinical factors.

*Conclusions*: Although women with a first lifetime psychiatric admission postpartum have a favorable clinical course up to 1 year after index admission versus women with any prior admission, 25% are readmitted with 1-year postdischarge, underscoring need for attention to this group.

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### 1. Introduction

Women who require postpartum psychiatric hospital admission are among the most seriously ill new mothers. While only about 1 to 2 per 1000 women require psychiatric admission in the first few months postpartum [1–3], these women almost always have severe psychiatric symptoms that may be life threatening for the new mother and her child [4,5]. Risk for psychiatric admission appears to be highest shortly after childbirth, with some epidemiological data suggesting that the risk may be up to seven times higher compared to other times in a woman's life [6]. Not surprisingly, previous history of psychiatric

E-mail address: simone.vigod@wchospital.ca (S.N. Vigod).

admission is a strong risk factor for postpartum admission. In one population-based study, the incidence of postpartum psychiatric admission among primiparous with no prior admission was 0.01% for bipolar and 0.04% for postpartum psychotic episodes but climbed to 4.48% and 9.24% for each of these diagnoses, respectively, among women with at least one prior admission [7]. However, the postpartum period is also a time for new-onset severe mental illness, with population-based data showing that about half of postpartum psychiatric admissions are in women who have never been previously hospitalized [8].

Studies from inpatient units have found that women with a first acute episode are more likely to improve during postpartum admission [9] and that women with past psychiatric history or previous psychiatric admission have greater risk for repeated admissions compared to those with a first acute episode postpartum [10,11]. However, this has not been well characterized on a population-level. Information about the clinical presentation, psychosocial needs and postdischarge health service utilization of postpartum women with a first lifetime psychiatric admission on a population level will inform the development of inpatient and postdischarge services that can best meet the needs of new mothers requiring psychiatric admission. Using detailed clinical data for all postpartum psychiatric admissions in a large Canadian province,

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 $<sup>^{*}</sup>$  Corresponding author at: Reproductive Life Stages Program, Women's Mental Health Program, Women's College Hospital, 76 Grenville Street Rm. 7234, Toronto, ON, M5S 1B2. Tel.: +1-416-323-6400x4080; fax: +1-416-323-6356.

we conducted a population-based cohort study of women with a first lifetime psychiatric admission postpartum, with attention to differences between these women and those with one or more psychiatric admissions prior to delivery. We aimed to describe a population-based sample of women with postpartum psychiatric hospital admissions and to compare those for whom this was a first lifetime psychiatric admission to those with prior psychiatric admissions on (a) sociodemographic and clinical characteristics at the index admission and (b) psychiatric service use after the index admission: follow-up with a mental health provider (primary care or psychiatry), return visits to the emergency department (ED) for psychiatric reasons without readmission and psychiatric hospital readmission.

#### 2. Methods

#### 2.1. Study design

This was a population-based cohort study conducted in Ontario, Canada's, most populous province (population~13 million) where all residents receive government-funded health care, including all mental health and obstetrical care. We included all women in Ontario, Canada, who had a live birth between April 1, 2007 and February 28, 2012 and who had an admission to a psychiatric inpatient unit in Ontario within 1 year from delivery. All women were followed until 1 year after discharge from the postpartum psychiatric hospital admission.

#### 2.2. Data sources

Data were accessed from the Institute for Clinical and Evaluative Sciences (ICES), an independent nonprofit research organization that maintains population-level databases to evaluate Ontario health care services. Personal identifiers are removed from inpatient and outpatient records in these databases and the Registered Persons Database (RPDB) links these records using a unique identifier. The RPDB also contains the age, sex and postal code for all Ontario residents with a provincial health card number. For the current study, we identified women who had delivered a live-born infant from the ICES MOMBABY database, which provides information on pregnancy outcomes for all women who had a hospital delivery in the province (~98% of deliveries) [12]. Data on psychiatric admissions were obtained from the Ontario Mental Health Reporting System (OMHRS). OMHRS contains detailed clinical information on all psychiatric inpatient admissions to a designated mental health bed for adults aged 18 and older in Ontario since 2005. OMHRS includes data from the Resident Assessment Instrument - Mental Health (RAI-MH), a comprehensive clinical assessment tool that is completed within 3 days of admission, at 90-day intervals during the admission (where applicable) and at discharge. The RAI-MH contains information on patient demographics, socioeconomic status, admission and discharge diagnoses (Diagnostic and Statistical Manual of Mental Disorders, Version 4; DSM-IV), measures of psychiatric symptoms using items from standard scales, substance use, cognition and functional impairment [13,14]. Additional datasets were the Canadian Institutes of Health Information - Discharge Abstract Database (CIHI-DAD) that contains information on all admissions in Ontario from 1988 onward, including psychiatric admissions until OMHRS began in 2005; the National Ambulatory Care Reporting System that contains diagnostic and acuity information on emergency room visits; and the Ontario Health Insurance Program database that contains information on all physician outpatient and inpatient visits, including for mental health and obstetrical care. Within these administrative databases, inpatient discharge diagnoses are valid and reliable, and outpatient physician billings are complete despite some interindividual variability in diagnostic coding [15].

#### 2.3. Participants

We included all live births from April 1, 2007 to February 28, 2012 to Ontario women admitted to a designated mental health bed in Ontario for any reason within 1 year from delivery. Women could contribute more than one delivery to the cohort. For any given delivery, if a woman had more than one psychiatric admission within 1-year postpartum, the first psychiatric admission in that year was considered the index admission. Non-Ontario residents and nonlive births were excluded. We only examined admissions for women who were hospitalized for ≥72 h because short-stay admissions are qualitatively different, with less opportunity for intervention during hospital and for planning the postdischarge transition. Further, the Ontario health care system treats these short-stay admissions differently, with fewer detailed clinical variables collected in the RAI-MH assessment. For all analyses, we stratified women into two groups, those with index admissions in the first 90 days postpartum and those with index admissions from days 91 to 365 postpartum because there are data that suggest potentially distinct etiology, phenomenology and course for cases of serious postpartum illness that present early versus late in the postpartum period. For example, the majority of cases of postpartum psychosis present within the first 3 months postpartum, whereas cases of unipolar depressive disorder may slowly become more severe overtime and result in later postpartum admissions [6]. Prior psychiatric admission was defined as any psychiatric admission prior to the index obstetrical delivery, as reported in the OMHRS RAI-MH on the index postpartum psychiatric admission.

#### 2.4. Sociodemographics

We included age, marital status, previous number of births (i.e., parity), language(s) spoken, living situation, source of income, education status, socioeconomic status using neighborhood income quintiles and geographical status (i.e., urban vs. rural). We were also able to report on stressors identified as occurring prior to the index admission including child custody issues, conflict in interpersonal relationships, sexual assault or abuse, physical assault or abuse and emotional abuse.

#### 2.5. Health history

We reported on maternal variables including presence of major medical illness (using the John's Hopkins Ambulatory Care Aggregated Diagnostic Group System) [16,17], frequency and provider of prenatal care and child variables including infant sex, preterm birth <37 weeks and infant death <28 days after birth. We included lifetime number of psychiatric admissions and time since last discharge. Psychiatric diagnoses, mental health outpatient visits and psychiatric ED visits in the 2 years prior to the index admission were recorded using both inpatient and outpatient databases. We also included history of self-harm and violent behavior toward others in the 30 days preceding admission as indicated on the RAI-MH.

#### 2.6. Index postpartum admission

We reported time since obstetrical delivery and length of stay on the index psychiatric admission. We reported on *DSM-IV* psychiatric diagnoses; whether or not the admission was voluntary; concerns about harm to self, harm to others or inability to care for herself due to mental illness; and the type of discharge (i.e., planned or unplanned). We reported on treatment variables during the index admission including individual and/or group psychotherapy, any prescribed medications, electroconvulsive therapy (ECT) and whether physical restraint measures were used. The RAI-MH also contains mental state symptom indicators that can be summed into scales [18]. We reported on nine of the RAI-MH symptom scales at each of admission and discharge: Depression Rating Scale (DRS) [19,20], Anxiety Symptom Scale, Mania

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