Rate of adolescent inpatient admission for psychosis during the COVID-19 pandemic: A retrospective chart review

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Abstract
Aim: Given the concerns for mental health (MH) impacts on children and adolescents during the COVID-19 pandemic, as well as the relative paucity of research in this field, this retrospective study compares the rate of paediatric inpatient MH admissions for psychosis for a period of 11 months before and during the pandemic.

Methods: We used administrative data to compare the rate and clinical characteristics of patients (<18 years) admitted to a psychiatric inpatient unit for a psychotic illness before (March 17, 2019 to February 17, 2020) and during (March 17, 2020 to February 17, 2021) the COVID-19 pandemic.

Results: Results showed a 66% increase in inpatient psychosis admissions from pre-pandemic rates. More males were admitted with psychosis during the pandemic. Age and length of hospitalization were not significantly different across time periods.

Conclusions: Results highlight the importance of accessible MH care for paediatric patients with psychosis during the pandemic.

KEYWORDS
COVID-19, paediatric, psychosis

1 | INTRODUCTION

In March 2020, Canada adopted public health measures to lower the transmission of COVID-19.

Resulting preventative measures, such as physical distancing, quarantine, lockdowns and school closures, imposed significant changes to the psychosocial environment. Consequent impacts on the mental health (MH) of children and adolescents are only just being recognized (Holmes et al., 2020).

Thus far, there is a relative paucity of evaluations of the psychological impacts of pandemics, especially in the paediatric population (Robillard et al., 2021).

Existing literature has identified children and adolescents as being particularly vulnerable to the MH effects of infectious outbreaks and associated disease containment measures, especially as they are experiencing the crisis during critical biopsychosocial developmental periods (Vigo et al., 2020). Transitional-aged youth have reported an increase in negative emotions and stress since the beginning of the COVID-19 pandemic, although, to date, this does not appear to have translated to an increase in suicidal ideation in this population (Gratz et al., 2021). Reflecting on the levels of psychosocial stress and trauma related to COVID-19 mitigating measures, studies have previously shown increased risk of psychosis in children and youth after stress (Gerson & Rappaport, 2013).

As psychosocial stress is an important risk factor for both the onset and exacerbation of psychosis and psychotic symptoms (Brown et al., 2020), the primary objective of this study was to determine if there has been an increase in the rate of adolescent inpatient MH admissions for a psychotic illness during the COVID-19 pandemic compared to the same time period 1 year prior. We hypothesized that the COVID-19 pandemic has resulted in an increase in paediatric admissions for psychosis. The secondary objective was to determine whether there was any change in the age, gender, or length of inpatient MH admission for a psychotic illness.
A retrospective chart review was conducted of all patients admitted to the MH inpatient unit at the Children’s Hospital of Eastern Ontario (CHEO) for a period of 11 months before and during the pandemic (March 17, 2019 to February 17, 2020 and March 17, 2020 to February 17, 2021 respectively). The pandemic time period was selected starting on the first day of lockdown in the region served by the paediatric hospital. All admissions for patients under 18 years of age were eligible for inclusion.

The following administrative data were extracted from the CHEO Research Institute data warehouse, for both time periods: (1) total number of MH inpatient admissions, (2) number of MH inpatient admissions for psychosis, (3) length of admission. The diagnostic variable of psychosis encompassed several DSM-5 and ICD-10 diagnoses, including psychosis, schizophrenia, schizoaffective disorder, brief psychotic illness, substance-induced psychosis, major depression with psychotic features, and mania, in an effort to capture all adolescents presenting with psychosis. Age, gender and history of COVID-19 infection were also extracted.

Data analyses include frequencies, proportions, and measures of central tendencies. For comparative analyses, we used between groups analyses (Chi-square and t-test for independent samples). The study was approved by CHEO’s REB (#20210078).

In the 11 months preceding the pandemic, there were 346 admissions by 276 patients (mean age = 15.2, SD = 1.7, 65.9% female) compared to 265 admissions by 181 patients (mean age = 15.1, SD = 1.7, 63.0% female) during the first 11 months of the pandemic. Of those admitted during the pandemic, 78 (29.4%) were for a psychotic illness compared to 62 (17.9%) in the year prior (Chi-square [1, N = 611] = 11.264, p = .001). This represents a 66% increase from the pre-pandemic admission rate.

Table 1 lists the results of the admission comparisons for age, gender and length of stay across time intervals. Only gender differed significantly between time periods. Specifically, females accounted for more admissions for psychosis before the pandemic and males accounted for more during the pandemic. Age and length of hospitalization were not significantly different across time periods. None of the patients hospitalized during the pandemic had a documented history of COVID-19 infection.

We observed an increase in the number of adolescent MH admissions with psychosis during the COVID-19 pandemic compared to the same time period 1 year prior. The higher percentage of adolescents with psychotic illness is driven by an increase in the absolute number of psychotic patients, along with the overall drop in admissions. A delay in seeking MH care during the pandemic may have contributed to increased severity and acuity of symptoms on presentation, necessitating admission. The decrease in overall MH admissions during the pandemic may be secondary to a regional health network effort to minimize the burden on the health care system by mandating that only involuntary admissions be authorized. Furthermore, reluctance to visit hospitals due to concerns regarding the risk of contracting COVID-19 in a high-risk environment may have been contributory. Additionally, outpatient services during the pandemic may not have been accessible, or sufficient, to keep psychotic youth well.

**TABLE 1** Comparison of patient admissions for a psychotic illness before and during the pandemic

|                          | Before COVID-19 pandemic | During COVID-19 pandemic | Test statistic | p-value |
|--------------------------|--------------------------|--------------------------|---------------|---------|
| Total number of MH admissions for psychosis (n = 62) (n = 78) |                          |                          |               |         |
| Age: mean (SD)           | 15.7 (1.3)               | 15.9 (1.2)               | –1.168        | .245    |
| Gender: n (%)            |                          |                          |               |         |
| Male                     | 21 (33.9)                | 48 (61.5)                | 10.579        | .001    |
| Female                   | 41 (66.1)                | 30 (38.5)                |               |         |
| Length of stay: mean (SD)| 12.5 (9.2)               | 14.3 (23.7)              | –0.547        | .585    |
| Admission type: n (%)    |                          |                          |               |         |
| Unique                   | 46 (74.2)                | 48 (61.5)                | 2.508         | .113    |
| Repeat                   | 16 (25.8)                | 30 (38.5)                |               |         |
| Type of psychotic illness: n (%) |                  |                          |               |         |
| Psychosis                | 38 (61.3)                | 56 (72.7)                |               |         |
| Mania                    | 18 (29.0)                | 23 (29.9)                |               |         |
| MDD with psychotic features | 9 (14.5)                | 5 (6.5)                  |               |         |
| Schizophrenia            | 4 (6.5)                  | 7 (9.1)                  |               |         |
| Brief psychotic illness  | 3 (4.8)                  | 5 (6.5)                  |               |         |
| Schizoaffective          | 0                        | 4 (5.2)                  |               |         |
| Substance-induced psychosis | 1 (1.6)                  | 0                        |               |         |
The decrease in social connectedness and scaling back of community and social supports, such as the school safety net, may contribute to increased psychological vulnerability and the development of psychotic symptoms. Currently, there are two studies in the literature that examined psychosis diagnoses during the pandemic, in patients not infected with the virus, but both look at adult populations and have major limitations (Brown et al., 2020).

Although the extent of gender differences in psychosis remains controversial, evidence indicates that females need more risk factors than males in order to develop psychosis (Ochoa et al., 2012). Later age of onset of psychosis in females, according to the oestrogen hypothesis (Ochoa et al., 2012), may also account for gender differences in cross-sectional, paediatric data presented. However, it should be noted that the gender differences observed in the current study may not be generalizable (O’Donoghue et al., 2021).

Limitations of this retrospective chart review include a small, single site design and lack of standardized diagnostic assessment. Not all possible correlates of patient admissions were evaluated. This study did not differentiate first episode psychosis from relapse in an existing diagnosis. Additionally, longitudinal follow-up of adolescents discharged with a diagnosis of a psychotic illness is indicated to clarify symptom persistence as well as provide diagnostic confirmation. Future research should look at large provincial or national databases and include several years of data prior to the pandemic to establish a baseline of admissions for psychosis.

5 CONCLUSION

This is the first study we are aware of that examines inpatient MH admissions for psychosis in children and adolescents during the COVID-19 pandemic. It shows that there are higher rates of paediatric admissions with psychosis during the pandemic. These results highlight the importance of improved understanding of the MH needs of paediatric patients accessing inpatient MH services during the COVID-19 pandemic, and to help guide treatment and resource planning.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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