Psychiatric Hospitalization for Psychopathological Disorders and Self-Injurious Behaviors in Italian Children and Adolescents during COVID-19

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Article

Psychiatric Hospitalization for Psychopathological Disorders and Self-Injurious Behaviors in Italian Children and Adolescents during COVID-19

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Abstract: The impact of the COVID-19 pandemic and the quarantine measures on children and adolescents' hospitalization psychiatric has been poorly studied, especially in Italy, the first European country to adopt social restrictions. To fill this gap, this retrospective study examined changes in admissions to our child and adolescent psychiatry ward from the emergency department during the two COVID-19 quarantine periods in Italy (March to June 2020; October 2020 to January 2021) compared with two reference periods (defined as 12 months prior to the respective quarantine periods). Specifically, we examined data on the number of inpatients and the distribution of psychopathological disorders (i.e., psychosis, mood disorder) and self-injurious behaviors. The results revealed significantly fewer admissions during the first quarantine period relative to the first reference period and, conversely, significantly more admissions during the second quarantine period relative to the second reference period. Of note, the results showed an increased frequency of mood disorders, non-suicidal self-injurious behaviors and suicidal ideation during the quarantine periods, compared to the reference periods. The findings underline the need to focus on the psychopathological profile of children and adolescents with patient-tailored therapeutic interventions and suggest the importance of developing psychological healthcare services for future emergency periods..

Keywords: COVID-19 pandemic; children; adolescents; psychiatric hospitalization; mood disorders; non-suicidal self-injurious behaviors; suicidal ideation

1. Introduction

In March 2020, the novel coronavirus (i.e.COVID-19) pandemic forced the general population to unprecedented social distancing and isolation measures, in an effort to contain infection. Worldwide, governments adopted strict lockdown measures to control the spread of the virus. Therefore, everyday habits and lifestyles were dramatically altered across familial, social, and professional spheres. This had a profound impact on the functioning of all individuals, regardless of their age, sex, and socio-economic status.

Research has shown that viral outbreaks and their associated quarantine measures tend to decrease psychosocial wellbeing. During the SARS CoV1 epidemic, for example, major anxiety and depression symptoms were found to be associated with a major risk of developing post-traumatic stress disorder and abuse conduct in young adults [1–3]. A number of studies [4–7] have reported a widespread presence of anxiety symptoms, mood deflection, and sleep disturbance in the general population during the COVID-19 pandemic. They have also reported significant psychological effects in children and adolescents [8–10], manifesting differently according to age. Specifically, in preschool children (i.e., aged 3–6 years), Jiao et al. [11] found an increase in irritability, inattention, and disruptive behaviors during the COVID-19 pandemic, associated with a high incidence of sleep disturbance, agitation, and separation anxiety due to the fear that family members could contract the virus. In children and adolescents (i.e., aged 6–18 years), Uccella et al. [12] observed an association

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between isolation, social distancing due to COVID-19, and anxiety, fear, and uncertainty about the future.

The COVID-19 pandemic and its associated restrictions may have particularly affected adolescents, who would have already been experiencing a vulnerable transitional period characterized by the onset of puberty and significant neurobiological, social, and cognitive changes [13,14]. Specifically, adolescents may have experienced aggravated chronic and acute stress during the pandemic, in the form of worry about family members, unexpected mourning, anxiety around the sudden closure of school and home confinement, stress caused by increased use of the internet and social media, and worry about the economic future of their family. In this vein,Vindegaard and Benros (5) suggested that the interruption of social relations during periods of school closure represented a main stressor for adolescents during the pandemic.

Guessoum et al.'s [15] literature narrative review on adolescent mental health during the COVID-19 pandemic showed an increase in psychiatric disorders, including depressive disorders, anxiety disorders, post-traumatic stress disorder, and grief-related symptoms. In a retrospective cohort study, Ougrin et al. [16] found that the proportion of pre-adolescents and adolescents presenting with self-harm increased from 50% in 2019 to 57% in 2020; moreover, the proportion of children and adolescents with emotional disorders increased from 58% to 66% over the same period.

Despite these findings, to date, the impact of the COVID-19 pandemic and its associated quarantine measures on children and adolescent emergency psychiatric care has been poorly studied. However, it is necessary to understand this impact in order to prepare clinical services for future periods in which significant reductions in social, school, and leisure activities may once again come into force. This is particularly relevant to the context of Italy, which was the first European country to adopt strict measures involving social distancing, prohibitions, and restrictions during the COVID-19 pandemic.

In February 2020, the Italian government declared a state of emergency over the COVID-19 pandemic. The first phase of the government's COVID-19 response (March 9 to May 3, 2020) included a general school closure, freedom of movement restrictions (enforceable by law), and the cancellation of all non-essential trips (e.g., school trips abroad). Consequently, all activities were paused, resulting in a significant reduction in child and adolescent extracurricular activities, including sports practices, music lessons, and theater classes. During the second phase of the COVID-19 response (May 4 to June 14, 2020), containment measures were eased, resulting in the legal removal of social isolation and regional movement limitations and the resumption of commercial activities. However, schools remained closed and only exams were attended in-person, with restrictions. Finally, in the third stage of the COVID-19 response (June 15 to October 7, 2020), all leisure activities were resumed, with restrictions.

The second wave of COVID-19 diffusion was observable in Italy from October 8, 2020. At this time, the Italian government once again applied strong limitations, closing schools and non-essential services. Furthermore, beginning on November 6, 2020, Italian governments, following European Community directions, applied regional containment measures, based on the regional contagious index (i.e., Rt index). At that time, school attendance was limited to a percentage capacity (e.g., 50% of all students attending at a time). Finally, from January 7, 2021, regional restrictions continued, enforceable via colored bands for each region.

Previous study of our research group [17] have focused on urgent psychiatric consultations for suicidal ideation and behaviors in Italian adolescents during different COVID-19 pandemic phases. Our is the first initial study on characteristics of psychiatric hospitalization in Italian children and adolescents during COVID-19. Specifically, in the current retrospective study, we examined changes in the number of admissions to the Child and Adolescent Neuropsychiatry Unit ward of Bambino Gesù Children's Hospital and the presentation of psychopathological disorders (i.e., psychosis, mood disorder, post-traumatic stress disorder, behavior disorder) and self-injurious behaviors in the admitted patients during the COVID-19 quarantine periods in Italy, in comparison to reference periods. Specifically, admissions during the months in which quarantine was imposed in Italy (i.e., March to June 2020; October 2020 to January 2021) were compared with admissions in the 12 months prior (i.e., March to June 2019; October 2019 to January 2020).

2. Materials and Methods

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2.1. Partecipants

The present retrospective study examined admissions to the Child and Adolescent Neuropsychiatry Unit emergency ward of Bambino Gesù Children's Hospital during COVID-19 pandemic. Bambino Gesù Children's Hospital is a 607-bed tertiary care academic hospital in Rome, Italy. The hospital comprises part of the Italian National Healthcare System and it is widely recognized as a referral center for all pediatric specialties at the national and international levels. The Child and Adolescent Neuropsychiatry Unit emergency ward admits children and adolescents (i.e., aged 5–17.9 years) who have been referred from the emergency department, at a maximum rate of eight beds per day. The present study considered admissions over two 4-month periods in which a national quarantine was imposed in response to the COVID-19 pandemic in Italy: March to June 2020 and October 2020 to January 2021. Admissions during the same periods 12 months prior (i.e., March to June 2019; October 2019 to January 2020) were also considered to allow comparisons on the number of admissions and the distribution of psychopathological disorders and self-injurious behaviors.

In our study, self-injurious behaviors were defined as "any act of self-poisoning or self-injury, irrespective of the underlying intent," according to the UK National Institute for Health and Care Excellence [18] clinical guidelines. Thus, both non-suicidal self-injury and suicide attempts were included. Suicidal ideation was categorized, according to DSM-5 [19], as "thoughts about self-harm, with deliberate consideration or planning of possible techniques of causing one's own death".

The study was approved by the Ethics Committee of the Children Hospital Bambino Gesù. All participants and their parents/legal guardians provided written informed assent and consent.

2.1.1. Clinical Assessment

All the patients included in this study were assessed with the same psychopathological assessment protocol:

- Psychopathological disorders were assessed using the Schedule for Affective Disorders and Schizophrenia for School Aged Children [20], a semi-structured interview administered to obtain psychopathological diagnosis, according to the DSM-5 criteria. The K-SADS-PL DSM-5, as proposed in the instrument manual by Kaufman et al. [20], provides as a source of information not only the child/adolescent but also the parents.
- Suicidal ideation and behavior was assessed with Columbia–Suicide Severity Rating Scale (C-SSRS). Suicidal ideation is defined by a score 3 or above.
- Non-suicidal self-injury (NSSI) was evaluated with assessment of the DSM-5 categorical diagnostic criteria for non-suicidal self-injury (NSSI), that is, NSSI on at least 5 days within the past year, suicidal ideation absent or low (score below 3 at the C-SSRS), and no previous suicide attempts. All these diagnostic tools were administered by child neuropsychiatrists and psychologists trained.

2.2. Statistical Analyses

Chi-square ($\chi 2$) contingency tables were used and odds ratios (OR) with 95% confidence intervals (95% CI) were calculated to measure the associations between diagnoses (i.e., psychosis, mood disorder, post-traumatic stress disorder, behavior disorder) and the quarantine versus the reference periods, as can be seen in Table 1.

Table 1. Distribution of Psychopathological Diagnoses between the Quarantine and the Reference Periods.

Diagnosis	**Distribution among admitted patients**	
	Quarantine periods	**Reference periods**
	# (%)	**# (%)**
Psychosis	34 (17.2)	42 (23.5)
Mood disorder	137 (69.2)	106 (59.2)
Post-traumatic stress disorder	19 (9.6)	17 (9.5)
Behavior disorder	8 (4.0)	14 (7.8)

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The same analyses were run to explore the associations between self-injurious behaviors (i.e., suicidal ideation, non-suicidal self-injurious behaviors, suicide attempts) and the quarantine versus the reference periods, as can be seen in Table 2.

Table 2. Distribution of Self-Injurious Behaviors between the Quarantine and the Reference Periods.

Self-injurious behaviors	Distribution among admitted patients	
	Quarantine periods # (%)	Reference periods # (%)
Suicidal ideation	80 (40.4)	53 (29.6)
Non-suicidal self-injurious behaviors	116 (58.6)	77 (43.2)
Suicide attempts	34 (17.2)	34 (18.9)

A p-value of less than 0.05 was considered statistically significant. $\chi 2$ analyses and OR were computed using R Studio (R Studio, Boston, MA), with particular reliance on the Epitools package (16).

3. Results

The number of admissions to the Child and Adolescent Neuropsychiatry Unit emergency ward differed between the quarantine and the reference periods ($\chi 21 = 5.43$, $p = 0.0197$). Specifically, z-tests were run to compare cells (17), with the critical value of 2.33 ($\sqrt{\chi 21} = \sqrt{5.43}$). There were significantly fewer admissions during the first quarantine period than the first reference period (77 vs. 91; z-test = -2.34) and significantly more admissions during the second quarantine period than the second reference period (121 vs. 88; z-test = 2.34).Considering the distribution of psychopathological diagnoses (see Table 1), the results showed a significant association between mood disorders and the quarantine versus the reference periods, with significantly more diagnosed mood disorders among admitted patients during the quarantine periods (OR = 1.54, 95% CI [1.01, 2.37], p = 0.04). No further associations emerged between diagnoses and the quarantine versus the reference periods (psychosis: OR = 0.68, 95% CI [0.41, 1.12], p = 0.13; post-traumatic stress disorder: OR = 1.01, 95% CI [0.50, 2.04], p = 0.97; behavioral disorders: OR = 0.50, 95% CI [0.19, 1.21], p = 0.12).Considering self-injurious behaviors (see Table 2), the results showed a significant association between suicidal ideation and the quarantine versus the reference periods, with significantly more suicidal ideation among admitted patients during the quarantine periods (OR = 1.61, 95% CI [1.05, 2.48], p = 0.03). Furthermore, a significant association emerged between non-suicidal self-injurious behaviors and the quarantine versus the reference periods, revealing a greater frequency of non-suicidal self-injurious behaviors among admitted patients during the quarantine periods (OR = 1.87, 95% CI [1.24, 2.82], p = 0.003). No significant association was found with reference to suicide attempts (OR = 0.88, 95% CI [0.52, 1.5], p = 0.65).

4. Discussion

The present retrospective study examined changes in the number of direct admissions to the Child and Adolescent Neuropsychiatry Unit emergency ward of Bambino Gesù Children's Hospital and the distribution of psychiatric disorders and self-injurious behaviors among admitted patients during the COVID-19 quarantine in Italy, in comparison to a reference period.

The results showed a decrease in the number of direct admissions during the first quarantine period.

Specifically, the number of admissions during the first quarantine period (77 patients, March to June 2020) was lower than that of the first reference period (91 patients, March to June 2019). This finding is aligned with the results of a retrospective international cohort study [16] of children and adolescent inpatients in hospital emergency departments in European countries (i.e., England, Scotland, Ireland, Hungary, Turkey, etc.).

There are two potential explanations for the lower number of admissions during the first quarantine period. First, families may have avoided emergency departments for fear of becoming infected or spreading infection. This hypothesis is consistent with the results of previous studies [21,22], which have underlined that the worries of young people and their parents about contracting and spreading COVID-19 may have severely reduced young people's psychological wellbeing and

use of mental health services. Second, as noted by Ougrin et al. [16], the lower number of children and adolescent admissions to psychiatry wards may be explained by the quarantine measures at the time. In Italy, many children and adolescents stopped attending school in March 2020. This is likely to have reduced their experience of academic pressure and minimized their number of distress factors. For example, many children and adolescents may have had fewer—or even no—opportunities to engage in face-to-face relationships, which the literature [23] associates with an increased risk of self-injurious behaviors and psychopathological disorder, as well as bullying and peer pressure to consume alcohol and drugs. In addition, many children and adolescents may have increased their psychological wellbeing during the first quarantine period, as a result of spending more time with family. Accordingly, it may be that some children and adolescents who would have otherwise accessed the hospital in crisis were able to access alternative coping strategies linked to different habits (i.e., staying at home) during the lockdown.

However, staying at home may have also generated long-term negative effects on the mental health of children and adolescents. In line with this, the present study found that the number of direct admissions increased significantly during the second quarantine period, compared to the second reference period (i.e., 121 patients, October 2020 to January 2021; vs. 88 patients, October 2019 to January 2020). It is possible that, in the second quarantine period, the persistent isolation, social distancing, and homeschooling may have determined anxiety, distress, fear, and a low mood, while reducing the ability to perform coping strategies and increasing the need for psychiatric services. In addition, differently from the first quarantine period, in the second quarantine period, parents came back work, and were thus less able to provide physical and emotional support to their children, who nevertheless continued to stay at home.

Considering the distribution of psychopathological disorders among the child and adolescent admissions during the quarantine periods, mood disorders were the most common. Additionally, these were more frequent during the quarantine periods than the reference periods (69.2% vs. 59.2%, respectively). These results are compatible with the literature [22–25], which indicates that the persistence of social restrictions and isolation during the COVID-19 pandemic was a risk factor for psychopathological disorders (including mood disorders) among children and adolescents. Oliva et al. [26], in a prospective cross-sectional study involving 9,688 pre-adolescents and adolescents, showed that the lifestyle changes generated by enforced and prolonged social isolation were associated with an increased prevalence of mental disorders, including mood disorders. In particular, the reduction of physical activity, the increased screen exposure (including for the purposes of homeschooling), and the interruption of face-to-face relationships with peers (which fostered a dependence on social media that contributed to the excess screen exposure) were identified as risk factors for the psychological wellbeing of children and adolescents during COVID-19. Additionally, change in sleeping patterns (e.g., irregular wake-up times, shorter or longer periods of sleep) was also acknowledged as a risk factor [27].

Concerning self-injurious behaviors among the admitted patients during the quarantine periods, an increased frequency of non-suicidal self-injurious behaviors was observed, compared to the reference periods (i.e., 58.6% during the quarantine periods vs. 43.2% during the reference periods). This finding aligns with the results of previous studies of adolescents during COVID-19 [16,28,29]. As proposed by Plener [30], non-suicidal self-injurious behaviors are often applied as an emotion regulation strategy to temporarily decrease or eliminate negative emotions. Therefore, negative emotions activated by lockdown pressure may have represented a significant risk factor for non-suicidal self-injurious behaviors during the quarantine. Additionally, during the quarantine periods, social support, which has been identified as a strong protective factor against non-suicidal self-injurious behaviors [31,32] may have only been accessible to some children and adolescents through social media. These factors, alongside limited access to face-to-face professional support, may have amplified children and adolescents' need to regulate negative emotions and thus increased their likelihood of practicing non-suicidal self-injurious behaviors. In line with the literature[33–35], the present findings could be helpful in informing the development of clinical and educational intervention programs for non-suicidal self-injurious behaviors during quarantine periods.

Moreover, Asarnow et al. [36] described non-suicidal self-injurious behaviors as a significant predictor of suicidal ideation and suicide attempts in adolescence. Consistent with this, the present study found increased suicidal ideation amongst children and adolescent admissions during the

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quarantine periods (i.e., 40.4% during the quarantine periods vs. 29.6% during the reference periods). However, no increase in suicidal attempts during the quarantine periods was observed (i.e., 17.2% during the quarantine periods vs. 18.9% during the reference periods). As a potential explanation for this, home confinement may have facilitated child–parent communication and intensified parental surveillance, thereby minimizing suicide attempts.

At the time of writing, the present study represented the first study to assess the number and the characteristics of psychiatric admissions during different time periods during the COVID-19 pandemic.

Regarding the limitations of our study, the research did not investigate the relationships between child and adolescent admissions and several risk factors during the quarantine (e.g., change in sleep patterns due to home confinement, homeschooling, decreased face-to-face social interaction). These factors should be considered in future research.

5. Conclusions

Overall, the present results provide insight into the impact of the COVID-19 quarantine measures on direct admissions to a child and adolescent psychiatry emergency ward and distribution of psychopathological disorders and self-injurious behaviors in children and adolescent admissions over this period. The results reveal changes in admission patterns during COVID-19, and suggest a critical reflection into the psychological needs of children and adolescents. Accordingly, the findings may inform the development of care services for future periods in which strict measures may once again come into force. Importantly, such care services should guarantee integrated therapeutic interventions for children and adolescent psychiatric inpatients, even after discharge (through, e.g., regular online consultations). Furthermore, to closely support children and adolescents and to prevent their long-term isolation, psychological and neuropsychiatric support programs (via social media, online chat, or telephone) should be arranged. These supportive therapeutic programs could prevent children and adolescents from experiencing the distress of hospitalization and separation from home and their parents.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and in accordance with Italian legal and ethical requirements for clinical data. IRB approval was obtained for the data reporting in the present report (Ethics Committee of Bambino Gesù Children's Hospital practice number 3161/2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the corresponding author, upon reasonable request. The data are not publicly available.

Conflicts of Interest: The authors declare no conflict of interest.

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