

Italian Children with Neurological Problems and the Effects of COVID-19 Confinement

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Abstract

Governments all across the world have been compelled to enact extreme containment and social segregation measures as a result of the COVID-19 outbreak. On February 21, 2020, the first SARS-CoV-2 infection case was announced in Italy, the first European nation to experience the emergency. The Italian government responded to the epidemic with a succession of more extensive steps to stop the infection from spreading. On February 23, 2020, schools in six northern regions were closed, and on March 4, 2020, schools worldwide were closed. All non-essential activities were put on hold a week later, on March 11, and residents were told to stay inside unless absolutely necessary or in an emergency. It was in total lockdown until May 4, 2020.

There is currently a lot of discussion on the cost-benefit implications of these approaches. As more and more facets of this discussion- which has an impact on everyone- are being examined, its breadth is expanding. We are particularly interested in determining the benefits and drawbacks of lockdown for kids with neurological illnesses as child neuropsychiatrists. When developing health policies that affect them, health policies for children with disabilities must take into account their complicated requirements, especially in times of extreme emergency like the current one.

The most current results confirm the general worry that COVID-19 problems are more likely to affect people with impairments. Given that people with disabilities are more likely than those without impairments to have underlying health issues, such findings scarcely come as a surprise. Living in community care settings, and SARS-CoV-2 infection are two factors that raise the likelihood of infection. Additionally, various disabilities may make it difficult for those with them to carry out standard preventative actions. Those with underlying neurological problems are more likely to die from seasonal influenza, notwithstanding the paucity of data in youngsters. All of this information shows that very stringent isolation and preventative measures are necessary.

Introduction

Against this, it is important to recognize that such restrictions on daily activities are likely to lead to mental stress and that they restrict access to basic care and rehabilitation programmes. Both those in good health and those with disabilities should be aware of this. It is a particular issue for kids and teenagers, for whom social exclusion, loneliness, and lockdown-related school closings have been found to cause problems and worse quality of life. Overall, these factors imply that children with neurological diseases may experience a worsening of their condition as a result of the new daily routine that the state of lockdown imposes as well as the difficulties in getting the care they require.

We conducted a retrospective analysis of the effects of the lockdown measures implemented during the COVID-19 incident in Lombardy on a sample of children with neurological illnesses and complicated impairments in an effort to at least partially understand this complex circumstance. The novel coronavirus first struck Italy's Lombardy area, which has been by far the most severely impacted. Therefore, it finds itself in the terrible situation of offering a prime viewpoint for researching the pandemic. In order to better understand how lockdown procedures impact the health and care of children with neurological instability during the lockdown. We specifically examined aspects of COVID-19 epidemiology, the occurrence of viral-like physical symptoms, and the relationship between the risk of symptoms and a number of demographic and clinical factors. We also assessed any deterioration in their neurological condition and changes in their access to and use of care services.

Subjective Heading

Children who are patients at the Vittore Buzzi Children's Hospital in Milan's Child Neurology Unit or the IRCCS "Santa Maria Nascente"

- Don Gnocchi Foundation in Milan's Child Neuropsychiatry and Rehabilitation Unit are included in this study. Both are third-level referral facilities in Lombardy for kids with neurological conditions.

In order to learn about the patients' health status and access to care during the COVID-19 lockdown, medical history and clinical data were obtained from their clinical records and a careful anamnesis was carried out. Face-to-face interaction was still restricted throughout the data collecting phase, therefore doctors from the participating centres interviewed caregivers in-depth over the phone. This approach was chosen because it allowed us to somewhat get around certain potential drawbacks of self-administered internet surveys (language barriers, incorrect interpretation of questions). The study's design the creation of the questionnaire and database.

The study was open to children diagnosed with a chronic neurological illness, with or without concomitant difficulties, who visited one of the two participating centres at least once between December 1, 2019, and May 4, 2020. Of the 660 youngsters who were eligible, 146 (22%) were disqualified: 55 (37%) could not be reached

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by phone, 67 (45.8%) could not be interviewed due to language issues, and 10 (6.8%) fled the country before the lockdown period began. 14 children's (9.5%) caregivers did not agree for them to be included in the study. Thus, 514 children (54.9% males and 45.1% girls) made up the study sample. The sufferers list the sociodemographic and clinical variables (gender, age, nationality, neurological illnesses, associated impairments, comorbidities, treatment, and vaccination status). Data on emergency department visits, hospital admissions, swab tests, the occurrence of viral-like physical symptoms, and the deterioration of neurological conditions are presented in along with information on where in Italy the children lived during the lockdown, their living circumstances, the presence of SARS-CoV-2-positive people and healthcare workers in the household, the number of children and household members who regularly went outside during the lockdown, and the number of children and household members who did so.

Descriptive analyses were used to describe the sample's personal and clinical characteristics, including information on neurological declines, access to care and treatment during lockdown, and COVID-19 epidemiology. We determined the proportion of patients, out of the overall sample, who displayed at least one viral-like symptom for each of the time periods taken into account (pre-lockdown and lockdown). The prevalence of each individual symptom, such as fever, respiratory symptoms, headache, exhaustion, and gastrointestinal symptoms, was then estimated for each time. Rash, loss of taste or smell, conjunctivitis, and other conditions, without considering whether a patient had only one symptom or several. We generated standardised mean differences to compare the prevalence rates of the various symptoms during the two study periods (SSMDs). Equipose was deemed to have been obtained when the covariate between-group comparison had an SSMD of 0.27 or below. Cohen defined a "small" effect size as a difference with a value between 0.2 and 0.49, a "mid" effect size as one between 0.5 and 0.79, and a "big" effect size as one greater than 0.8.

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We looked examined the relationship between the risk of experiencing at least one symptom in each of the two periods (studied separately) and the following variables of interest in order to find potential risk factors for viral like-symptoms: Age, sex, neurological conditions, level of disability, comorbidities, therapy, immunisation history, place of residence, interaction with SARS-CoV-2-positive roommates, presence of a healthcare provider, and regular absences from the house during the lockdown are all factors to consider (both of the patient and of other members of the household). Using a logistic regression model that was adjusted for all of the aforementioned factors, ORs and 95% confidence intervals were calculated.

Children who frequently left the house during the lockdown were found to have an increased risk of developing symptoms compared to those who did not (OR= 3.63; 95% CI [1.52 to 8.67]), as were those who lived at home with their families rather than in residential care settings (OR= 24.14; 95% CI [1.43 to 407.14]); however, only 4 of the 59 patients who developed at least one symptom during the lockdown lived in a residential community: the resulting confidence interval. The

remaining covariates that were examined did not provide statistical support that would have allowed us to confidently identify additional risk factors.

The characteristics of the symptomatic and asymptomatic patient populations in each of the two periods are described in supplementary table 1, which provides cell sizes, in order to facilitate accurate interpretation of the results of these two models and ensure that the estimates are given their proper weight. For all the covariates included in the models. It can be seen that for a number of categorical variables, especially within the exposed population observed during the lockdown period, we are dealing with very small numbers of cases.

The COVID-19 pandemic is anticipated to have long-term effects on public health policies and medical practises. The current scenario calls for attention to the varied range of needs that children with neurological problems have. Our goal was to assess the effects of lockdown in children with chronic neurological illnesses and impairments, paying particular attention to how it affected patients' access to care and rehabilitation therapy as well as the protection it provided against the danger of infection.

The impact of lockdown on the likelihood of infection was the first factor we looked at. The bulk of the children in our sample live in Lombardy and, like the great majority of Italian children with disabilities, they mostly attend mainstream schools and nurseries. They also frequently visit other social communities where their peer group congregates. As a result, these vulnerable patients, like their peers, are exposed to the typical seasonal infection risks during the course of their daily lives. Additionally, like their peers, they were previously exposed to the risk of SARS-CoV-2 infection and other potential viral infections prior to the recent school closures.

Discussion

We evaluated the prevalence of symptoms suggestive of a viral infection in the period just prior to the lockdown and during the lockdown itself in order to determine whether the lockdown had decreased the risk of infection. Prior to the lockdown, when containment measures had not yet been implemented and schools were still open, the proportion of patients exhibiting viral-like symptoms was noticeably greater, and it dramatically decreased during the lockdown. The risk of infection was then determined using a case-crossover study. Around 80% less people had at least one of the symptoms during the lockdown than they did before. These statistics show how effective the containment procedures that were implemented- in other words, the lockdown-were at preventing contagious diseases.

We looked at a number of demographic and clinical characteristics to find particular risk or protective factors. It was discovered that kids who frequently left the house during the lockdown were more likely to experience at least one symptom, and that kids who live at home with their family are more likely to experience symptoms than kids who live in residential care facilities. While the second discovery, based on a very small sample size, has to be further verified in a larger sample, the first observation further confirms the protective effect of the lockdown itself on the risk of infection. We are unable to definitively identify any additional risk factors among the demographic or clinical variables with the information we currently have.

11.5% of the patients experienced a worsening of the underlying clinical illness; in the majority of these cases, this worsening was accompanied by fever or other symptoms indicative of a viral infection; in just 1.5% of cases, the clinical deterioration was unrelated to

infectious symptoms. In these latter situations, it may have its roots in the disruption to daily life brought on by the state of lockdown (in the case of children with neurodevelopmental problems), or it may be explained by normal variations in the course of the disease (in those with conditions such as epilepsy).

Despite the fact that, during the two-month lockdown, about two-thirds of the patients had to miss scheduled check-ups and roughly one tenth had to forego a planned hospital admission, the percentage of patients demonstrating a worsening of their underlying clinical condition was rather modest. The support that pediatricians and child neuropsychiatrists were able to offer in the form of phone/email consultations and telerehabilitation sessions, which more than made up for the lack of direct contact and treatment, is one reason for this low rate of worsening. In parallel, the lockdown dramatically changed the way these patients were cared for by expanding the role of caregivers. The caregivers were able to provide their kids more than enough attention and support since they were there for them all the time. This helped to meet their needs and somewhat make up for the absence of regular treatment. Even though the strategy used in this unusual situation is unquestionably helpful in the context of a public health emergency, it needs to be better assessed from a longer-term perspective, taking into account both the potential treatment deficit caused by skipped hospital check-ups and in-person rehabilitation sessions, and- perhaps most importantly the psychological and physical toll on the entire families of these patients.

Conclusion

In conclusion, none of our patients had serious problems despite the fact that a sizable proportion of them suffered viral-like symptoms. Lockdown has proven to be a successful tactic for safeguarding vulnerable patients from infection and potential COVID-19 consequences in these kids with neurological abnormalities and related difficulties. In children with neurological disorders, the new telemedicine strategy can be a respectable substitute for more conventional forms of care and treatment but it must not be allowed to become a generalized and set standard of care.

Unquestionably, models of this nature work well in the short term, but they must be carefully examined and expanded, especially with a view to increasing the support- including social support- offered to families, who cannot be expected to combine full-time care with smart employment. Additionally, it's critical to keep parents from being isolated and consumed with the care demands of their kids. Last but not least, it is essential to ensure that all COVID-19 and other emergency

response plans consistently fully account for the unique requirements of children with disabilities and do not overlook the fundamental role of enabling these children's full participation in society.

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Conflict of Interest

The authors declare that they are no conflict of interest.

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