

Impact of Covid-19 Pandemic on Paediatric Population: A Case Series

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Summary

The COVID-19 pandemic has been a bane to the paediatric population in affecting their social, physical, emotional and behavioural state of mind. Children from all the age groups were affected with different kinds of developmental delays such as speech and language delays, feeding issues, cognitive impairments, regression of physical skills, emotional disturbances and difficulty in learning. We have observed various developmental concerns in paediatric populations due to financial difficulties, increased screen time, lack of physical activities, stress and anxiety among parents and children. The following study focused on the short case descriptions having the impact of COVID-19 on various contexts in paediatric population. A multidisciplinary approach was delivered with a team consisting of a Physiotherapist, Occupational therapist, Speech and Language pathologist and Psychologist, which helped these children.

Keywords: COVID-19 pandemic, developmental delay, paediatrics, physiotherapy, occupational therapy, speech therapy, child psychology.

Introduction

COVID-19 Pandemic has caused the world to follow a new set of norms required for prevention of the spread of the novel virus. These guidelines including regular hand washing, wearing masks and social distancing were made mandatory.^[1] The government of India announced the first lockdown on 24th March 2020, restricting movement of people across the country.^[2] Since the emergence of the COVID-19 pandemic in 2019, there has been a significant impact on the social, physical, behavioural and emotional aspects in the global population.

Paediatric Development Centre caters services to children with Developmental Delay. Medical Research

Centre-Kasturba Health Society (MRC-KHS), ANSHU Development Clinic provides early intervention to children having neuro developmental delays, academic, social or behavioural concerns and children in need of emotional support. At our clinic, the warmth of the therapist's physical touch was taken away due to the transition in treatment modality to online therapy or guided treatment with protective kits in order to comply with COVID-19 guidelines.

Development refers to maturation of function and acquisition of various skills for optimal functioning of an individual.^[3] Milestones are a global process reflected in physical, cognitive, social, emotional and com-

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munication abilities.^[3] Failure to achieve such milestones may signal medical or developmental difficulties seeking professional help. A delay in development can occur due to various genetic or environmental factors.

COVID-19 related restrictions have caused a reduction in physical activity, increase in sedentary behaviour and flexible sleep schedules for children and adolescent.^[4] These changes in behaviour represents a significant problem as health behaviour patterns in children are likely to persist into adulthood leading to risk of numerous health problems. The social distance measures and school closures may have limited children’s ability to engage in sufficient levels of physical activity to maintain health and prevent disease, further leading to an increased rate of obesity in children.^[5]

Ancillary features of the COVID-19 pandemic had long-lasting effects on the development of speech and language skills.^[6] Infants and toddlers who depend on nonverbal modes of communication (55% of overall communication) such as facial gestures and expressions had reduced ability of interpersonal interaction.^[7] It has been researched, masks serve as a low-pass filter and obscure facial expressions.^[8] COVID-19 symptoms affected olfactory and gustatory systems in preverbal children, which resulted in feeding issues specifically acute food aversion and hypersensitivity for certain foods.^[9] Likewise, social distancing has impeded the language skills of school-aged children by not engaging in peer talks and cooperative games. With deficient peer talk, primary and secondary grader’s pragmatic development deteriorated including conversational skills such as turn taking and understanding the implied meaning behind a speaker’s words.^[10] Moreover, access to therapy during the lockdown affected opportunities to promote speech and language development for all age groups of children, especially to those who were having deficient skills.

The surge of the pandemic has

led to higher levels of depression among women during and after pregnancy.^[11] The stress during pregnancy can create an effect on an infant’s brain development leading to potential delay. It was found that children born during the COVID-19 pandemic had reduced verbal, motor, and overall cognitive performance than children born before January 2019.^[12] During the pandemic, there was worsening of behavioural symptoms in children with Autism Spectrum and Attention Deficit Hyperactivity Disorders. In parents and children anger, emotional exhaustion and Post-Traumatic Stress Disorder (PTSD) were also found to be very common.^[13]

According to WHO Guidelines, children aged 0-2 years should not have any screen time.^[14] Children aged 2-4 years and 5- 17 years can have less than 1 hour and fewer than 2 hours of screen time per day respectively.^[14,15] The leisure screen time increased exponen-

Table 1: Development from ages 1-s 16 years^[20]

Age in Years	Physical Development	Cognitive Development	Emotional Development	Social and Language Development
1 to 3	Achieves walking, running, stair climbing	Explore an environment which increases in parallel with improved dexterity i.e. reaching, grasping, releasing and mobility	Differentiates between strangers and familiar faces. Asserts independence	Uses social words for greeting (hi, bye), protesting (no)and requesting (please)
3 to 6	Uses fork and knife Cuts line with scissors Obstacle crossing	Children pay close attention to stories and make remarks related to story	Begins to express a wider range of emotion and can be spontaneously kind and caring	Separates from caregiver easily Practice conversation often by talking to self
6 to 9	Skilled at using scissors Has good sense of balance Enjoys testing muscle strength and skills	Likes doing experiments and enjoys planning and building Better problem- solving abilities Longer attention span Differentiates between right and left	More aware of perception of others Uses problem solving, negotiating and compromising skills with peers	Asks meaning on new word Able to articulate a complicated sequence of events and range of ideas using expressive language
9 to 12	Muscle strength, coordination and stamina increase progressively and the ability to perform complex movements like dancing	Eagerness to please adults and approval from peers Competitiveness and willingness to work for delayed reward	Popularity is won by different possessions like having latest electronic gadget etc	Can explain meaning of words Can construct sentences involving time concepts
12 to 16	Girls and Boys exhibit different levels of physical maturity	Improvement in reasoning skills Lives in the present, mixed with some fantasy	Convinced that everyone else is watching or judging Very concerned about body image	Comprehends and uses analogies, inductive and deductive reasoning Understands metaphors and sarcasm

tially during the COVID-19 Pandemic, which gave rise to reduced psychological well-being among individuals.^[4,16] The pandemic has largely affected children and families by disrupting routines, change in relationships and roles, and altering usual child care, school and leisure activities.^[17] Families differed in their approach to lifestyle, physical exercise and health grievances of children. Living in a nuclear family greatly affected women and children during the pandemic due to the closure of essential support systems such as day care centres and schools.^[18] Contrary to this view, joint families carried more resources to positively engage their children in creativity, emphasise on resolving emotional grievances, promote positive emotional engagement.^[19] Recent studies suggested that underlying restrictions had a negative impact on the emotional and physical well-being of families staying at home.

Case Series

Following is our observation of concerns in paediatric populations arising due to the COVID-19 pandemic in different contexts.

1. Screen Time and its Effect on Speech, Language and Learning

A case of a 3-year-old male child with native language Hindi, reported to the clinic regarding issues related to speech. Parents reported that the child had screen-time for almost 5 hours per day watching English cartoon videos. During the Speech Language Pathologist (SLP) evaluation, he was diagnosed having speech issues like echolalia and palilalia with significant pragmatic language difficulties. He verbally imitates those registered words associated with the videos and does self-talking. The child had developed an accent similar to those of cartoon characters. Occupational therapy assessment is suggestive of hyperactivity, poor eye-contact, poor age-appropriate cognitive abilities, poor attention and concentration.

2. Loss of Family Members due to COVID-19 and its Impact on Child

A 3 years 9 months old male child came to ANSHU Clinic with complaints of communication difficulties, poor eye contact, poor sitting tolerance, chewing difficulties and increased mouthing of non-edible substances. The child had experienced loss of father and grandfather after long hospitalisation due to COVID-19. During this period the screen time increased for almost 8-10 hours per day. On examination, the motor milestones were age appropriate. However, speech, language, cognitive, social and emotional milestones were delayed. Earlier the child was babbling at 1 year of age, but currently there isn't any verbal imitation of speech. Though the child can skim the print media words and articulate them without any errors, he couldn't use

these words in reciprocal communication. On occupational therapy evaluation, the child showed sensitivity issues, poor auditory attention, dependent in activities of daily living, poor social interaction. These consequences have left the child with high risk of Autism Spectrum Disorder.

3. Feeding Difficulties Due to Delay in Diagnosis of Oro-motor Structural Deficits

A 2 year 6 months old male child reported to our clinic with complaints of inability to bite and chew solid food items. Child was only having a semi-solid intake of food and had a severe gag reflux. Parents were unable to reach their doctor for follow-up in person to get this issue addressed. Child continued with the same routine during the pandemic. After the uplift of restrictions, the child was evaluated by a Nutritionist and Occupational Therapist. The child's weight was appropriate and didn't have any sensory issues, respectively. During the SLP evaluation, the child had Ankyloglossia and was referred to Ear Nose Throat surgeon for further treatment.

4. Financial Circumstances due to COVID-19 Lockdown and its Effect on Child's Intervention

A 4 year 4 months old female child with a history of infantile spasms reported to our clinic in May, 2021 with global developmental delay. Both the parents are artists working in the entertainment field. Due to the allowance of limited essential services being open during the pandemic, they were left without a source of financial income. Hence, they had to stop earlier prescribed physiotherapy and to keep the child occupied screen time was up to 4-5 hours per day. On Physiotherapy evaluation, the child had not achieved transfers to sitting or standing, poor sitting control and no form of locomotion. Evaluation by Speech Therapist suggested that the child was articulating only vowels and bilabials at phonetic level with no regular consistency and had feeding difficulties. On Formal Testing by the SLP receptive and expressive language age was between 9 to 11 months. The child missed the critical period of development leading to poor cognitive development due to discontinuation of therapy. COVID-19 Pandemic and monetary constraints had created a collateral consequence on the child's development.

5. COVID-19 Pandemic Delayed the Child's Academic Progress

A 6-year-old male child came to ANSHU clinic with concerns of exaggerated emotions of laughter and crying, hyperactivity and speech delay. On evaluation, the child had been expressing himself through pointing accompanied with monosyllabic vocalisations. The child didn't have any true words to express his needs

and faced issues even with expressing his emotions. His mother is the sole working woman, taking care of her son and the family. She felt immensely stressed due to her increased responsibilities and about her child's condition. As a consequence of COVID-19 pandemic and being a single parent, the child couldn't get formal assessment and therapy intervention, which has delayed his access to formal schooling.

6. Sibling Born During COVID-19 and Impact on Autistic Child

A 5-year-old male child was referred to our clinic in 2019 before the pandemic from school with concerns of not following teachers' command, solitary play, and repetitive movements. The child diagnosed with Sensory Integration Dysfunction and Autism Spectrum Disorder. Living in a nuclear family during the pandemic, the pregnant mother felt socially isolated and had a greater fear of infection. Both the parents were working from home. After birth of new born sibling their attention was focused on the baby. Thus, making the child feel neglected and causing aversion towards his younger sibling. Eventually, the child started feeling insecure around younger children and in group gatherings. When exposed to a younger age group he becomes alert, vigilant, sensitive and insecure leading him to suppress his emotions. After the ease of restrictions, the child faces difficulty in offline school. The school requested parents to admit the child into a special school.

7. Parents with Increased Workload Caused Symptoms of Loneliness in Children

Following the first phase of the lockdown, the parents of a 9-year-old female child came with concerns of the child feeling lonely and frustrated, hence, threatening to jump out of the window to get out of the house. As parents were in the pharmaceutical business, the child was left alone at home. Due to overwhelming feelings and absence of playtime, the child was asking parents for siblings. When explained about it, she was adamant to get a pet or she would run away. On examination, she was above average academically but had emotional disturbances during the strict lockdown and was open to engaging in risky behaviours to escape from home. The step taken by the child instilled fear, shock and panic in the parents who worked at the forefront during the pandemic.

8. Anxiety Issues in Children with Sensory Integration Dysfunction (SID)

An 11-year-old female child came in for therapy with complaints of fear, tantrums, insecurity and dislike for her great-grandparents. She has a history of SID and was coming for therapy at the age of 7 years

to our centre. The pandemic created a great deal of distress and overwhelming feelings in her, as she was living with them for the whole day. As children are now communicating via video meetings with their friends, she does most of her daily activities on zoom meeting with her friends. Eventually, she got habituated to this routine and preferred virtual meeting over communicating with peers personally. Post lockdown, she started feeling anxious and fearful in various social situations such as speaking in class, school presentations and viva. She started refusing to stay at home without her parents. The pandemic created a deviation in the child's lifestyle.

9. Lack of Physical Activity and Weight Gain During COVID-19

An 8-year-old single female child resumed therapy at our centre in February 2022 with difficulties in coping with academics. Earlier the child was evaluated in March 2020. After a few sessions the centre was shut down due to lockdown; however, therapy was discontinued after a couple of online sessions. The child faced difficulty in coping with virtual schooling. Due to fear of infection, parents didn't opt for therapy for 2 years even after ease of restrictions. The child had limited exploratory play, physical activity and interaction with other children during the pandemic, as a result, impacting the child's weight gain and laziness. The child has lost 2 crucial years of learning and her emotional, social and cognitive levels are stuck at 6 years of age.

10. Effect on Physical and Mental Wellbeing During COVID-19 Pandemic

A 12-year-old male early adolescent, was evaluated as having concerns of behavioural issues, increased motor tics, lack of attention, anger and mood instability. His first episode of tics began when he was 8 years old, but had subsided with medications. During the lockdown, with the increase in screen time, the episode of tics reappeared, causing him mild anxiety. Apart from this, staying at home worsened his relationship with the family. He began throwing tantrums with his parents and engaged in physical and verbal fights with his sister who is five years elder to him. Although he loves his parents, he is unable to control his anger towards them and he feels nobody understands him. He is now undergoing therapy for his varied concerns. Excessive time spent online has affected physical and mental wellbeing of the child.

11. Absence of Therapy and Impact on a Child with Physical Disability

A 14-year-old male adolescent with Cerebral Palsy ambulating with assistance was going for regular classes in a special school including physiotherapy

and occupational therapy. According to Gross Motor Functional Classification Scale (GMFCS), the child was at level 4. During the COVID-19 pandemic, due to the shutdown of all the schools and therapy centres, the child was restricted at home. The parents were unable to maintain the home exercise program and orthotics schedule which led to a regression in his GMFCS to level 5. After the child returned to our clinic, when re-evaluated, the child had deformities of the knee and ankle joint. Due to the above reasons the child is currently unable to bear weight on his lower limbs and is wheelchair dependent.

Conclusion

We have observed that children born from 2019 have significantly reduced verbal, motor and cognitive performance due to the COVID-19 pandemic and subsequently showcased increase in emotional disturbances. Also, a shift in the age group for referrals from school going children pre pandemic to toddlers during the pandemic have been noted in our paediatric development centre. Additionally, there were more cases with parents' concerns of speech and communication difficulties than our usual referral of hyperactivity and learning difficulties. Looking at the COVID-19 scenario, we had come up with new norms to include all aspects of social, emotional and physical well-being.^[21] A program for every individual child encompasses a range of need-based specialized training provided by a multidisciplinary team.

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