

Original Research Article

Behavioural and emotional disorders in children during COVID-19 pandemic in Ujjain district

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Received: 30 June 2023

Accepted: 13 July 2023

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ABSTRACT

Background: Objectives of the study was to find the prevalence of behavioral and emotional disorder in children and correlate it with various epidemiological factors.

Methods: This observational study includes 240 children of 6 to 18 years of age using child behavioral checklist (CBCL). The study was conducted from the month December 2020 to June 2022, as this was the period with major COVID-19 cases in Ujjain district.

Results: Out of 240, children showed clinically significant behavioral problems were oppositional defiant disorder 29.4% (n=5), anxiety 14.90% (n=10), attention deficit/ hyperactivity 14.9% (n=4), depression 10.421% (n=25), somatic 5.80% (n=9) and conduct problems 3.8% (n=6).

Conclusions: The COVID-19 pandemic has caused behavioral problems in adolescents, correlated with age, gender, history of infection, death, and quarantine in the family member.

Keywords: COVID-19, Behavioural problems, Emotional disorders

INTRODUCTION

The world has been rapidly destroyed by the COVID-19 pandemic without any warning. All age groups have been challenged by this, but children who are still developing have it even harder.¹ Since 41% of Indians are under the age of 18, it is important to pay attention to their mental health during and after the pandemic. These effects extend across many aspects of health and well-being, not just one.² Despite being thought of COVID having a milder clinical course in children in terms of the severity of the disease, has numerous psychological, emotional, physical, social, and cultural effects on children.³ In 2020, there were 24% more children aged 5 to 11 seeking mental health treatment in emergency rooms than in 2019.⁴ Studies have documented the damaging effects of psychological stress due to negative events in children in the form of anxiety, depression, lethargy, impaired social interaction, and reduced appetite.⁵ This study aims to investigate whether emotional/behavioural problems in

children have increased during the rapid spread of COVID-19.

METHODS

Our observational study was conducted on 240 children living in Ujjain district. The inclusion criteria were age group between 6 to 18 years and exclusion criteria was; visual, hearing or motor disability, and intellectual disabilities. The study was conducted from the month December 2020 to June 2022, as this was the period with major COVID-19 cases in Ujjain district. All participants were given a detailed explanation of the purpose and the procedures of the study. Parents provided their informed consent in written form. Preformed questionnaire was prepared by translating child behaviour checklist (CBCL) into local language i.e. Hindi. Face to face interviews were taken and if not possible, then by telephonic conversation. In order to detect the emotional and behavioural changes in the population child behaviour check (CBCL) list tool

along with general questionnaire was asked in an interview format. Emotional and behavioural problems were the primary outcomes as assessed by specific items drawn from the respective age-adapted German versions of the child behaviour checklist (CBCL): for the age 6–18 years.⁶ Every domain was correlated with age, gender, history of COVID-19 infection, history of death in family due to COVID-19 infection and history of quarantine in family. CBCL 2001 version (CBCL; Achenbach) is translated in the local language Hindi and standardized. For translation into Hindi WHO guidelines were followed. These included translation from English to Hindi by two subject- experts (paediatrics) and the language expert.

CBCL is one of the most commonly used measures of child psychopathology which involves obtaining care giver's reports.⁶ The CBCL is a component of the Achenbach system of empirically based assessment (ASEBA). It is an evidence-based questionnaire used to assess behavioural and emotional problems in children and adolescents.⁶ In this questionnaire there are 113 statements with three possible answers recorded on a Likert scale: 0 not true, 1 sometimes or fairly true, 2 often true or very true. The results are distributed in subscales as t-scores. The normative data are divided as follows: a t-score ≤ 64 is normal, an interval at the limits is indicated by a t-score between 65 and 69, and a t-score ≥ 70 indicates clinical symptoms. Scores $>97\%$ are in the clinical range, indicating more problems than the reported for the normative sample. Scores between 93rd-97th percentiles are in the borderline range of the normative sample. Scores < 93 rd percentiles are in normal range.

Depressions, anxiety, somatic complaints, social withdrawal were among internalizing problems whereas oppositional and conduct problems were externalizing problems.

Statistical analysis

All statistical analysis done with the help of statistical software statistical package for the social sciences (SPSS) 21.0 version. Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on mean $\pm$ SD and results on categorical measurements are presented as number (%). Chi-square test has been applied to find association between categorical variables. Analysis of variance (ANOVA) has been used to find the significance of study parameters between three or more groups of patients. Student's t test has been used to find the significance of study parameters on continuous scale between two groups. Significance is assessed at 5% level of significance.

RESULTS

The total sample size included 240 participants between the age group of 6-18 years. Participants were divided into 3 categories of age groups - below 8 years 65% (n=156), between 8-12 years 27.9% (n=67) and more than 12 years

7.08% (n=17). There is preponderance of males 55.42% (n=133). Due to pandemic 32.08% (n=77) had family history of positive COVID-19 infection, 23.75% (n=57) had history of deaths and 40.42% (n=97) had history of quarantine in the family. According to CBCL category, the participants were divided into normal 87.08% (n=209) borderline 7.50% (n=18), and clinically significant 5.42% (n=13). The 6 domains of CBCL were evaluated for depressive, anxiety, somatic, attention deficit/hyperactivity disorder, oppositional defiant disorder, and conduct behavioural problems. Every domain was correlated with age, gender, history of COVID-19 infection, history of deaths in family due to COVID-19 infection and history of quarantine in family. Significant factors associated with higher level of depressive, anxiety, somatic, attention deficit, oppositional symptoms were age group, gender, history of deaths and quarantine due to COVID-19 infection in the family. Including other covariates history of COVID infection was also significant factor that was associated with conduct behavioural problems. 10.4% (n=25) showed clinically significant depressive symptoms. In all three categories of age group clinically significant depressive symptoms were more than borderline depressive symptoms 10.421% (n=25) versus 7.3% (n=6) (p=0.000). More females who suffered from borderline as well as clinically significant depressive symptoms as opposed to males 5.6% (n=6) versus 0.00% (n=0) and 14.0% (n=15) versus 7.52% (n=10) respectively (p=0.004). 31.6% (n=18) children showing clinically significant depressive symptoms and 7.01% (n=4) children showing borderline depressive symptoms had a positive history of deaths due to COVID-19 infection in the family (p=0.000). 21.6% (n=21) children showing clinically significant depressive symptoms and 4.1% (n=4) children showing borderline depressive symptoms had negative history of quarantine in the family due to COVID-19 infection. Maximum number of children 29.4% (n=5) showing borderline anxiety symptoms were above 12 years of age group while, maximum number children of 14.90% (n=10) showing clinically significant anxiety symptoms were between 8-12 years of age group (p=0.000). More females who suffered from clinically significant as well as borderline anxiety symptoms as opposed to males 11.21% (n=12) versus 2.3% (n=3) and 8.4% (n=9) versus 5.3% (n=7) respectively (p=0.009). Equal number of 19.30% (n=11) children showing borderline and clinically significant anxiety symptoms had a history of deaths due to COVID-19 infection in the family (p=0.000). 16.5% (n=16) children showing borderline anxiety symptoms and 9.3% (n=9) children showing clinically significant anxiety symptoms had a positive history of quarantine in family due to COVID-19 infection (p=0.000). 5.80% (n=9) children showing clinically significant somatic symptoms were below 12 years of age and 13.4% (n=9) children showing borderline somatic symptoms were between 8-12 years (p=0.001). More females who suffered from clinically significant as well as borderline somatic symptoms as opposed to males 11.2% (n=12) versus 4.5% (n=6) and 8.4% (n=9) versus 3.0% (n=4) respectively

($p=0.021$). Maximum number of 24.6% ($n=14$) children showing clinically significant and 14.00% ($n=8$) children showing borderline somatic symptoms had history of deaths due to COVID-19 in the family ($p=0.000$). Maximum number of children 16.5% ($n=16$) showing clinically significant somatic symptoms and 9.3% ($n=9$) showing borderline somatic symptoms had history of quarantine in the family ($p=0.000$). 14.9% ($n=4$) children showing clinically significant attention deficit symptoms and 13.6% ($n=7$) children showing borderline significant attention deficit symptoms were below 12 years of age ($p=0.000$). more females who suffered from clinically significant as well as borderline attention deficit symptoms as opposed to male 13.1% ($n=14$) versus 3.8% ($n=5$) and 6.5% ($n=7$) versus 3.8% ($n=5$) respectively ($p=0.015$). 22.8% ($n=13$) showing clinically significant attention deficit disorder and 15.8% ($n=9$) children showing borderline attention deficit disorder had history of deaths due to COVID-19 infection in the family ($p=0.000$). 18.6% ($n=19$) children showing clinically significant attention deficit symptom and 7.2% ($n=7$) children showing borderline attention deficit symptoms had history of quarantine in the family ($p=0.000$). 22.8% ($n=13$) showing clinically significant attention deficit disorder and 15.8% ($n=9$) children showing borderline attention deficit disorder had history of deaths due to COVID-19 infection in the family ($p=0.000$). 29.4% ($n=5$) children showing clinically significant oppositional symptoms were above 12 years of age while, 20.5% ($n=16$) children showing borderline oppositional symptoms were below 12 years of age group ($p=0.000$). More males suffering from clinically

significant oppositional symptoms as opposed to females 6.8% ($n=9$) versus 5.6% ($n=6$) respectively ($p=0.000$). 19.3% ($n=11$) children showing borderline oppositional symptoms and 19.3% ($n=11$) showing clinically significant oppositional symptoms had history of deaths due to COVID-19 infection in the family ($p=0.000$). 13.4% ($n=13$) children showing borderline oppositional symptoms and 12.4% ($n=12$) showing clinically significant oppositional symptoms had history of quarantine in the family ($p=0.000$). Maximum 16.4% ($n=11$) children showing borderline conduct behavioural symptoms were between 8-12 years of age and 3.8% ($n=6$) children showing clinically significant conduct behavioural symptoms were below 8 years of age group ($p=0.005$). More males suffering from clinically significant conduct symptoms as opposed to females 4.5% ($n=6$) versus 3.7% ($n=4$) respectively ($p=0.002$). Maximum number of children 11.7% ($n=19$) showing borderline conduct symptoms and 6.5% ($n=5$) showing clinically significant conduct symptoms had history of COVID-19 positive cases in family ($p=0.037$). Maximum number of children 24.6% ($n=14$) showing borderline conduct disorder symptoms and 14.0% ($n=8$) showing clinically significant conduct disorder symptoms had positive history of deaths due to COVID-19 infection ($p=0.000$). Maximum number of children 18.6% ($n=18$) showing borderline conduct disorder symptoms and 7.2% ($n=7$) showing clinically significant conduct disorder symptoms had a positive history of quarantine in the family ($p=0.000$).

Table 1: Study of distribution of all the domains of child behavior checklist with different variables.

Symptom category	Age group (years)			Gender		COVID-19 infection in the family		Deaths due to COVID-19 infection		Family member quarantined	
	<8	8-12	>12	M	Fe	Yes	No	Yes	No	Yes	No
Depression											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	2	4	0	0	6	0	6	4	2	4	2
Clinically significant	10	10	5	10	15	7	18	18	7	21	4
P value	0.000			0.004		0.201		0.000		0.000	
Anxiety											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	7	4	5	7	9	4	12	11	5	16	0
Clinically significant	5	10	0	3	12	3	12	11	4	9	6
P value	0.000			0.009		0.457		0.000		0.000	
Somatic											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	3	9	1	4	9	4	9	8	5	9	4
Clinically significant	9	5	4	6	12	3	15	14	4	16	2
P value	0.001			0.021		0.339		0.000		0.000	
ADHD											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	5	7	0	5	7	4	8	9	3	7	5

Continued.

Symptom category	Age group (years)			Gender		COVID-19 infection in the family		Deaths due to COVID-19 infection		Family member quarantined	
	<8	8-12	>12	M	Fe	Yes	No	Yes	No	Yes	No
Clinically significant	7	7	5	5	14	3	16	13	6	18	1
P value	0.000			0.015		0.284		0.000		0.000	
Oppositional											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	4	12	0	1	15	2	14	11	5	13	3
Clinically significant	8	2	5	9	6	5	10	11	4	12	3
P value	0.000			0.000		0.221		0.000		0.000	
Conduct											
Normal	144	53	12	123	86	70	139	35	174	72	137
Borderline	6	11	4	4	17	2	19	14	7	18	3
Clinically significant	6	3	1	6	4	5	5	8	2	7	3
P value	0.005			0.002		0.037		0.000		0.000	

DISCUSSION

The aim of our study was to evaluate the impact of the COVID-19 pandemic on children behaviour and emotional part of wellbeing. Overall, our findings showed that lockdown had affected children adversely. This result is consistent with the literature: in a study by Schmidt et al through online survey conducted from 9 April to 11 May 2020 during the acute phase of major lockdown measures,⁷ 5823 children and adolescents aged between 1 and 19 years participated. The study was conducted in Zurich, Switzerland. Outcome was assessed by specific items drawn from the respective age-adapted German versions of the CBCL. Between 2.0% and 9.9% of the 1–19-year-olds reported emotional and behavioural problems above the clinical cut-off. Pre-schoolers aged 1–6 years had clinically relevant mental health problems in 4.7% (anxiety), 7.8% (affective problems) and 9.9% (oppositional-defiant problems) of the sample; schoolchildren aged 7–10 years in 4.3% (withdrawn/depression), 9.7% (anxiety/depression) and 9.9% (aggressive problems); adolescents aged 11–19 years in 4.3% (withdrawn/depression), 9.7% (anxiety/depression), and 2.0% (aggressive problems).

Alsaeed et al conducted a descriptive, cross-sectional study of 400 children aged 8 to 16 years, while Schmidt et al conducted an online survey of 5823 children and adolescents.^{7,8} Ray et al conducted an observational study to assess stress in children and youth between 9 and 18 years age based on the short self-rating questionnaire (SSRQ).⁹

Ahmed et al conducted a cross-sectional study in Egypt from February to May 2021 on 148 children age 6–12 years old.¹⁰ The majority of children had a negative history of COVID-19 infection in the family, while only 32.08% had a positive history. Brooks et al and Sourabh et al both studied the psychological impact of quarantine, with stress

factors associated with duration of quarantine measures, fear of being infected, frustration and boredom, and inadequate information.^{11,12} The main post-quarantine stressors were identified as financial losses and stigma.

In the present, study 240 children were selected randomly for CBCL and were interrogated for six domains: depression, anxiety, somatic, attention-deficit/hyperactivity, oppositional, and conduct behaviour disorder.

All the six domains were divided in categories as normal, borderline and clinically significant according to child behaviour checklist.

This study found that 87.08% of 240 children were normal, 7.50% had borderline significant symptoms, and 5.42% had clinically significant symptoms. A similar study by Takahashi et al and Schmidt et al found that between 2.0% and 9.9% of 1–19-year-olds reported emotional and behavioural problems above the clinical cut-off.^{4,7} In this study, 87.08% of 240 children were normal, 7.50% had borderline significant symptoms, and 5.42% had clinically significant symptoms. Pre-schoolers aged 1–6 years had clinically relevant mental health problems.

Factors affecting depression symptoms

This study found that 10.42% had clinically significant and 2.5% had borderline significant depressive symptoms. Correlation of depressive symptoms with different age groups, gender, history of COVID-19 infection in family, history of deaths due to COVID-19 infection in family, and history of quarantine due to COVID-19 infection in family were all statistically significant. An online survey conducted in China showed 43% had depression, with female students having more depressive symptoms. A cross-sectional study by Schmidt et al reported that schoolchildren aged 7–10 years had 4.3%

(withdrawn/depression), 9.7% (anxiety/depression) and 9.9% (aggressive problems), while adolescents aged 11-19 years had 4.3% (withdrawn/depression), 9.7% (anxiety/depression) and 2.0% (aggressive problems).⁷ Negative consequences were significantly associated with higher problem-levels in all age-groups.

Factors affecting anxiety symptoms

This study found that 6.7% had borderline and 6.3% had clinically significant anxiety symptoms. Correlation of different age groups, gender, history of COVID-19 infection in family, history of deaths due to COVID-19 infection in family, and history of quarantine due to COVID-19 infection in family were all highly statistically significant. The study of Duan et al and Zhou et al found that anxiety levels in children and adolescents aged 12-18 years were significantly higher than before the outbreak.^{13,14} This was due to different age groups, gender, history of deaths, and quarantine due to COVID-19 infection in the family. The overall scores of five dimensions (including separation anxiety, physical injury fear, social phobia, panic disorder, and generalized anxiety) were higher than before the outbreak, especially the fears of physical injury in children and social phobia in adolescents.

Orgile s et al, Garcia de Avila et al, and Yeasmin et al studied the emotional impact of quarantine on children and adolescents aged 3-18 years.¹⁵⁻¹⁷ They found that children had nervousness, worries, anxiety, fear, and fear. Anxiety was higher among children with essential jobs, social distancing without parents, more persons living together in the home, and lower education level.

Factors affecting somatic symptoms

This study found that 7.5% had clinically significant and 5.42% had borderline significant somatic symptoms. Correlation of somatic symptoms with different age groups, gender, history of COVID-19 infection in family, history of deaths due to COVID-19 infection in family, and history of quarantine due to COVID-19 infection in family were all statistically significant. In a similar study by Akcay et al in Ankara, Turkey, 110 adolescents (56 boys, 50.9%, mean age 14.72 years) and their parents were included.¹⁸ Behavioural and emotional problems was assessed using the CBCL 6-18 parent-rated questionnaire. Thought problems were the most common problems in the entire sample (25.5%). Somatic and attention symptoms were more frequent in females and fatigued adolescents.

Factors affecting attention deficit/ hyperactivity symptoms

This study found that 7.9% had clinically significant and 5.0% had borderline significant attention deficit symptoms. Correlation of attention deficit/hyperactivity symptoms with different age groups, gender, history of COVID-19 infection in family, history of death due to

COVID-19 infection in family, and history of quarantine due to COVID-19 infection in family were all statistically significant. Additionally, 18.6% (n=19) children showed clinically significant attention deficit symptoms and 7.2% (n=7) had a positive history of quarantine in the family.

Factors affecting oppositional defiant symptoms

The present study found that 6.67% (n=16) had borderline symptoms while, 6.3% (n=15) children had clinically significant oppositional symptoms. Correlation of oppositional defiant symptoms with different age groups, gender, history of COVID-19 and death due to COVID-19 infection in family were all statistically significant. Schmidt et al found that males were more likely to experience an increase in oppositional-defiant behaviour than females.⁷ Exposure to COVID-19 was significantly associated with a decrease in withdrawn/depression and aggressive behaviours in adolescents but not in children. Being confident to cope with the pandemic was associated with less anxiety/depression and withdrawn/depression while feeling emotionally overwhelmed had the opposite effect.

Factors affecting conduct symptoms

The present study found that 8.75% had borderline symptoms and 4.17% had clinically significant conduct symptoms. These symptoms were correlated with different age groups, gender, and history of COVID-19 infection, deaths and quarantine in the family due to COVID-19 infection. This study found that 24.6% of children showed borderline conduct disorder symptoms and 14.0% had a positive history of deaths due to COVID-19 infection. Correlation of conduct symptoms with history of quarantine due to COVID-19 infection in family was statistically significant. Ahmed et al reported 17.6% of conduct problems in 148 children aged 6-12 years old.¹⁰ Takahashi et al reported that clinically significant conduct problems were recorded in both waves of the pandemic, but more commonly seen in second wave (21.9%) than wave one (17.2%).⁴

CONCLUSION

Present study shows that the COVID-19 pandemic has caused various behavioural problems in the children between 6-18 years of age group affecting their mental health. Adolescents (>12 years age) showed more depression, anxiety, somatic and oppositional-defiant behaviours when all these domains were correlated with age, gender, history of COVID-19 infection, history of death in family due to COVID-19 infection and history of quarantine in family.

ACKNOWLEDGEMENTS

Authors would like to thank pediatrics department, NICU and PICU of RD Gardi Medical College and our admitted

patients of CR Gardi Hospital, Ujjain, without their support this study would not have been possible.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Jain R, Dhaneria M, Srivastava S. Behavioural and emotional disorders in children during COVID-19 pandemic in Ujjain district. *Int J Contemp Pediatr* 2023;10:1199-204.