

**Original article**

**Psychological impact of ‘lockdown’ on behaviour of children during COVID-19 pandemic: An online survey**

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**Abstract**

**Background:** COVID-19 pandemic and subsequent lockdown has disrupted the daily routine and required an adjustment to ‘new normal’. The psychological impact of ‘lockdown’ as a social distancing strategy among children needs to be studied well.

**Aim:** To assess the psychological impact of ‘lockdown’ on behaviour of children and adolescents.

**Methods:** An online survey was conducted among parents of 3-15-year-old children by using Google Form. A 35-item self-designed questionnaire was used for the purpose of the study. Total 645 responses were received by the stipulated time.

**Results:** The mean age of the children was 8.3 years ( $\pm$  3.5). Majority of the children were male (51.6%), 1<sup>st</sup> born child (82.2%), and studying in primary school (44.8%). Near about one-third on the children became irritable (35.3%), hyperactive (33.3%), defiant/ disobedient (38%), anxious (29.9%), and crying often (32.7%) during the period of lockdown. Near about two-third of the children engaged more in mobile phones (63.4%) and watched television (58.1%) compared to their usual self during lockdown. Near about two-third (58.3%) and one-third (32.2%) of the children reported change in their sleeping and feeding habit respectively. Majority of the male (38.7%) and female (42.6%) children coped well with the lockdown.

**Conclusion:** Index survey suggested that one-third of the children and adolescents were adversely affected due to lockdown.

**Key words:** COVID, lockdown, psychological impact, children

## **Introduction**

The Corona Virus infection or COVID-19 outbreak has risked the physical and mental health of a huge population over a large geographical area. The COVID-19 infection started in China in December 2019 and spread to almost all the countries of the world in next two months [1]. The World Health Organisation (WHO) declared it as a pandemic in the month of March, 2020 and as on 1<sup>st</sup> December 2020, near about 63.5 million cases have been confirmed and more than 14,73,000 deaths have been reported across 204 countries, areas or territories and the cases are likely to rise [1].

In India, cases of COVID -19 started to rise by 2<sup>nd</sup> week of March 2020 and till date more than 9.4 million infections have been reported with 1,37,659 deaths [2]. Cases of COVID-19 in India have either a positive travel history, or came in contact with COVID-19 positive subject [3]. In view of rising number of cases, the Prime Minister of India declared “Lockdown” in the whole country starting from midnight of 25<sup>th</sup> March 2020 for next 21 days and this was further extended many times with some relaxations [4]. Similar or even stricter measures have been adopted by other countries in the world to prevent community spread of COVID19 infection.

‘Lockdown’ is an emergency measure where all educational institutions, shopping malls, local markets, work places, public transports are completely shut down except for emergency services e.g. hospitals, petrol pumps, groceries etc. Historically, lockdown was implemented in the aftermath of September 9/11 attacks in New York and during riots in several countries

of the world. It is estimated that, closure of schools and colleges had a negative impact on 91 percent of student population in the world [5].

Lockdown can ensure social distancing and thereby contain the spread of highly infectious COVID-19 virus. But, at the same time, it can negatively affect the general population, particularly the children, psychologically. Quarantine for any cause and in the context of a pandemic has been known to cause depression, anxiety, fear, anger, ideas of loneliness, sleep disturbances, etc. in short term and post-traumatic stress disorder and depression in long run [6]. In a survey by a non-governmental organisation (NGO), which included 2111 young participants with prior history of mental illness, 83% respondents reported worsening of their mental illness and 26% reported difficulty in accessing mental health services [5]. During Ebola virus outbreak in West Africa, children were victims of increased rates of child abuse, neglect, and exploitation [6]. In a recent survey by another NGO of over 6000 children and parents in the western countries, up to two-third of the children reported boredom and feelings of isolation. Almost one in four children in the survey reported, feelings of anxiety and depression [7]. In another survey, more than a third of the 2,000 parents surveyed felt that they do not have enough support on how to look after their children's mental health and many reported findings home schooling a challenge for both themselves and their children. The majority of parents (87%) said that their children have communicated that they were missing school and just under a half of respondents reported that their children were feeling lonely [8]. A survey conducted by an NGO in India found that, more than half of the children became more agitated and anxious during lockdown; every four in five children were exposed to screens for greater period of time compared to their usual self; and every two in five children reported a change in their eating pattern [9].

Preliminary studies done during the pandemic found younger children (3-6years old) were manifesting symptoms of clinginess and were apprehensive of family members being infected

with the virus. Older children felt more uncertain, fearful, isolated and more likely to experience inattention, disturbed sleep, nightmares, poor appetite, agitation, and were persistently inquiring regarding COVID-19 [10-13]. Studies done during this lockdown period have found that absence of routine structured activities of school for prolonged period has resulted in disruption of routine, boredom and lack of innovative ideas. Children also expressed sadness of mood due to lack of outdoor activities, friends and in-person school activities [5,14,15]. Another study conducted among teenagers also found a rise in hoarding behaviour [16].

COVID-19 pandemic provides a unique opportunity to study the psychological impact of a rare administrative measure - lockdown, which is imposed under extraordinary circumstances. There is dearth of literature from India which attempted to look into the behavioural impact of lockdown on children. The novelty of index study lies in the fact that it was conducted at a time when no published literature was available on this topic except for some newspaper surveys and surveys conducted by NGOs and it looked into the psychological impact of 'lockdown' on behaviour of children and adolescents while lockdown measures were still in force. Aim of the index study was to evaluate the psychological impact of 'lockdown' on behaviour of children and adolescents during COVID-19 pandemic.

## **Methods**

The index survey was conducted online using Google Form with link sent by using WhatsApp to groups of professional colleagues and guardian's groups of the first author. A total of 1160 WhatsApp users the form. Google form maintains anonymity by allowing the person who devised the questionnaire to see the responses but not the name who sent it. The link was first circulated at 10:00 IST on 15<sup>th</sup> May 2020 and kept open for responses till 18.00 IST on 20<sup>th</sup> May 2020. Daily reminder was sent to the members of the groups. The survey invitation allowed the participants with the choice of not participating in the survey. It also clearly stated

that, participation in the survey will imply providing informed consent. Although the questionnaire was designed to assess the impact of lockdown on behaviour of children and adolescents, responses were sought from parents. The questionnaire had the provision for filling up the contact number (mandatory) and email id (if any) of the respondents which helped the investigators to check for duplicity in the data. Parents having more than one child were asked to fill up separate form for each child. The survey questionnaire could be completed in 7 minutes time. Total 645 responses (response rate was 55.6 percent) were received by the stipulated time. Institutional Ethical Committee (IEC) clearance was obtained.

Inclusion criteria were children and adolescents aged between 3-15 years; parents who are able to read and comprehend English language; had internet connection and WhatsApp installed on their phone and exclusion criteria were children with disability; unwilling and not providing informed consent for the study. The recipients were given the choice of not responding to the survey; all the information provided by the respondents were kept confidential; and in case, someone had sought psychiatric help, they would be guided properly.

Self-designed questionnaire of 35-item self-designed questionnaire was used for the purpose of the study. The questionnaire included 2 sets of questions – (a) socio-demographic profile of the respondents and participants e.g. respondent's age, gender, profession, child's age, gender, educational level etc., and (b) psychological impact of lockdown on behaviour of children and adolescents. The questionnaire was reviewed by two independent psychiatrists and one clinical psychologists and modifications were done as per their suggestions. Internal consistency was checked by statistical means and Cronbach's alpha came out to be 0.78. The questionnaire was pre-tested on parents of fifteen children aged between 3-15 years.

#### *Statistical analysis*

Descriptive analysis was computed in terms of mean and standard deviation with range for continuous variables and frequency with percentage for ordinal and nominal variables. Chi-

Square test was used to compare the behavioural variables between male and female children. All analysis was done with the help of SPSS (Version 21, IBM Corp., Armonk, NY, USA).

## Result

Majority of the respondents were having one child (63.1%), from nuclear family (59.8%), in private job (34.6%), both parents staying together (90.1%) and working parent staying at home during lockdown (80.5%). The mean age of the children was 8.3 years ( $\pm 3.5$ ). Majority of the children were 1<sup>st</sup> born (82.2%) male (51.6%) child and studying in primary school (44.8%) [Table 1].

**Table-1: Sociodemographic profile of the sample (N=645)**

<b>Variables</b>	<b>N (%) / Mean <math>\pm</math> S.D.</b>
Gender of the parent	
Male	328 (50.9)
Female	317 (49.1)
Profession of the parent	
Homemaker	109 (16.9)
Government job	214 (33.2)
Private job	223 (34.6)
Self-employed	99 (15.3)
Both the parents stay together	581 (90.1)
Working parent has been staying at home during lockdown	519 (80.5)
Family type	
Nuclear	386 (59.8)
Joint	204 (31.6)
Extended	55 (8.5)
Number of Children	
One	407 (63.1)
Two	227 (35.2)
Three or more	11 (1.7)
Gender of the child	
Male	333 (51.6)
Female	312 (48.4)
Birth order of the child	
1 <sup>st</sup>	530 (82.2)
2 <sup>nd</sup>	104 (16.1)
3 <sup>rd</sup>	11 (1.8)

Which class does your child study?	
Pre-school	163 (25.3)
Primary school (Class 1 to Class 5)	289 (44.8)
High school (Secondary – Class 6 to Class 10)	175 (27.1)
High school (Higher Secondary – Class 11 & 12)	18 (2.8)
Age of the parent (in years)	39.5 (5.3)
Age of the child (in years)	
Mean age of any child	8.3 (3.5)
Mean age of male child	8.45 (3.5)
Mean age of female child	8.18 (3.5)

Near about one-third of the children became irritable (35.3%), hyperactive (33.3%), defiant/ disobedient (38%), anxious (29.9%), and crying more often (32.7%) during the period of lockdown. Near about one-tenth of the children became violent (15.7%), introvert (9.8%), were verbalising negative thoughts (16.1%), and were having frequent nightmares (9.6%) during the lockdown [Table 2].

**Table-2: Behavioral pattern of children during the lockdown period (N= 645)**

Categorical variables (Yes/ No)		Yes	No	Chi-Square Test
		N (%)		
Has he/she become irritable during the period of lockdown?	Total	228 (35.3)	417 (64.7)	0.65
	Male	115 (34.5)	218 (65.5)	
	Female	113 (36.2)	199 (63.8)	
Has he/she become hyperactive during the period of lockdown?	Total	215 (33.3)	430 (66.7)	0.61
	Male	114 (34.2)	219 (65.8)	
	Female	101 (32.4)	211 (67.6)	
Has he/she become defiant, disobedient, or opposing during the period of lockdown?	Total	245 (38.0)	400 (62.0)	0.37
	Male	132 (39.6)	201 (60.4)	
	Female	113 (36.2)	199 (63.8)	
Has your child become violent (hitting, biting or pinching others with/ without provocation during the period of lockdown?	Total	101 (15.7)	544 (84.3)	0.84
	Male	51 (15.3)	282 (84.7)	
	Female	50 (16.0)	262 (84.0)	
Is your child crying easily during the period of lockdown?	Total	211 (32.7)	433 (67.1)	0.27
	Male	103 (30.9)	230 (69.1)	
	Female	109 (34.9)	203 (65.1)	
Has your child become anxious during the period of lockdown?	Total	193 (29.9)	452 (70.1)	0.64
	Male	97 (29.1)	236 (70.9)	
	Female	96 (30.8)	216 (69.2)	
Is your child having frequent nightmares during this lockdown?	Total	62 (9.6)	583 (90.4)	0.10
	Male	38 (11.4)	295 (88.6)	
	Female	24 (7.7)	288 (92.3)	

Whether you child has grown introvert/ mute during this period of lockdown?	Total	63 (9.8)	582 (90.2)	
	Male	31 (9.3)	302 (90.7)	0.68
	Female	32 (10.3)	280 (89.7)	
Whether your child is verbalizing any negative thoughts (e.g. fear of contracting COVID, fear of falling ill, fear of dying etc.) during this period of lockdown?	Total	104 (16.1)	541 (83.9)	
	Male	56 (16.8)	277 (83.2)	0.62
	Female	48 (15.4)	264 (84.6)	
Did your child acquired any new skills (e.g. eating or bathing on his/her own, riding bicycle, swimming etc.) during this lockdown?	Total	429 (66.5)	216 (33.5)	
	Male	216 (64.9)	117 (35.1)	0.36
	Female	213 (68.3)	99 (31.7)	
Does he/she engage in mobile phone more than his/her usual self?	Total	409 (63.4)	236 (36.6)	
	Male	212 (63.7)	121 (36.3)	0.89
	Female	197 (63.1)	115 (36.9)	
Does he/she engage in watching television more than his/her usual self?	Total	375 (58.1)	270 (41.9)	
	Male	195 (58.6)	138 (41.4)	0.82
	Female	180 (57.7)	132 (42.3)	
Does he or she has the scope for outdoor sports activity during the lockdown period?	Total	164 (25.4)	481 (74.6)	
	Male	93 (27.9)	240 (72.1)	0.13
	Female	71 (22.8)	241 (77.2)	
Is the school having online classes for your child?	Total	486 (75.3)	159 (24.7)	
	Male	253 (76.0)	80 (24.0)	0.70
	Female	233 (74.7)	79 (25.3)	
Is there any change in feeding habit of your children during the period of lockdown?	Total	208 (32.2)	437 (67.8)	
	Male	104 (31.2)	229 (68.8)	0.56
	Female	104 (33.3)	208 (66.7)	
Is there any change in sleeping habit of your children during the period of lockdown?	Total	375 (58.3)	269 (41.7)	
	Male	200 (60.1)	133 (39.9)	0.34
	Female	176 (56.4)	136 (43.6)	
<b>Categorical Variables</b>				
		<1 hour	1-3 hours	>3 hours
What amount of time does he /she engage in mobile phone?	Total	257 (39.8)	279 (43.3)	109 (16.9)
	Male	124 (37.2)	151 (45.3)	58 (17.4)
	Female	133 (42.6)	128 (41)	51 (16.3)
What amount of time does he /she engage in watching television?	Total	237 (36.7)	335 (51.9)	73 (11.3)
	Male	120 (36.0)	174 (52.3)	39 (11.7)
	Female	117 (37.5)	161 (51.6)	34 (10.9)
		<1 hour	1-2 hours	>2hours
How much time does your child spend in doing online classes and finishing the school tasks given in those classes?	Total	70 (10.9)	237 (36.7)	250 (38.8)
	Male	36 (10.8)	123 (36.9)	135 (40.5)
	Female	34 (10.9)	114 (36.5)	115 (36.9)
		Yes	No	Not regular, but on some days
Does any of the parent spend time with him/her playing indoor games for at least 30 minutes every day?	Total	326 (50.5)	58 (9.0)	261 (40.5)
	Male	173 (52.0)	33 (9.9)	127 (38.1)
	Female	153 (49.0)	25 (8.0)	134 (42.9)

Does your child indulge in art and craft works/ music/ storytelling / story writing/ reading storybooks etc regularly during this period of lockdown?	Total	398 (61.7)	54 (8.4)	192 (29.8)
	Male	205 (61.6)	24 (7.2)	103 (30.9)
	Female	193 (61.9)	30 (9.6)	89 (28.5)

Near about two-third of the children acquired various new skills (66.5%) during lockdown, however, they also engaged more in mobile phones (63.4%) and watched television (58.1%) compared to their usual self during lockdown. Near about two-third (58.3%) and one-third (32.2%) of the children reported change in their sleeping and feeding habit respectively [Table 2].

Majority of the children were moderately easy child before (41.4%) and during (44.2%) lockdown as reported by their parents. However, percentage of very difficult child increased marginally from pre-lockdown (1.2%) to lockdown (1.6) time [Table 3]

**Table-3: Comparison of child's overall behaviour before and during the period of lockdown (N=645)**

		Easy child	Moderately easy child	Not so easy child	Difficult child	Very difficult child	Chi-Square Test
How do you rate your child's behaviour/ temperament ordinarily (before the period of lockdown)	Total	262 (40.6)	267 (41.4)	89 (13.8)	19 (2.9)	8 (1.2)	0.09
	Male	137 (41.1)	127 (38.1)	52 (15.6)	14 (4.2)	3 (0.9)	
	Female	125 (40.1)	140 (44.9)	37 (11.9)	5 (1.6)	5 (1.6)	
How do you rate your child's behaviour/ temperament during the period of lockdown	Total	207 (32.1)	285 (44.2)	117 (18.1)	26 (4.0)	10 (1.6)	0.16
	Male	111 (33.3)	133 (39.9)	66 (19.8)	16 (4.8)	7 (2.1)	
	Female	96 (30.8)	152 (48.7)	51 (16.3)	10 (3.2)	3 (1.0)	

Majority of the male (38.7%) and female (42.6%) children coped well with the lockdown [Table 4]. No significant difference was found in terms of behavioural variables between male and female children.

**Table-4: Children’s coping ability during lockdown (as reported by parents) (N=645)**

	<b>Very poor</b>	<b>Poor</b>	<b>Average</b>	<b>Good</b>	<b>Very good</b>	<b>Chi-Square Test</b>
Total	6 (0.9)	15 (2.3)	142 (22.0)	262 (40.6)	220 (34.1)	
Male	5 (1.5)	9 (2.7)	73 (21.9)	129 (38.7)	117 (35.1)	0.45
Female	1 (0.3)	6 (1.9)	69 (22.1)	133 (42.6)	103 (33)	

## **Discussion**

Index survey remained unique in the sense that it assessed the psychological impact of lockdown on children and adolescents while the lockdown was still in force and almost 7 weeks have elapsed since it was announced.

The socio-demographic profile suggests majority of the respondents were male, having one child, from nuclear family, in private job, both parents staying together and working parent staying at home during lockdown. The mean age of the child was 8.3 years ( $\pm$  3.5). Majority of the children were male, 1<sup>st</sup> born child, and studying in primary school. This profile is typical of a family staying in urban areas of West Bengal where the survey was conducted.

Near about one-third on the children became irritable, hyperactive, defiant/ disobedient, anxious, and crying often during the period of lockdown. This finding was in keeping with the finding of a recent survey, in which, one in four children living under COVID-19 lockdowns, were dealing with feelings of anxiety and depression [7]. However, another survey from India reported, higher (more than 50%) percentage of children becoming agitated and anxious [10]. In index study, near about one-tenth of the children became violent, introvert, were verbalising negative thoughts, and were having frequent nightmares during the lockdown. Recent studies

also reported that, near about half to 65% of children reported boredom and isolation due to lockdown [5, 7, 8, 10-15]. School routines are important coping mechanisms for young people with mental health issues. When schools are closed, they lose an anchor in life and their symptoms could relapse. This higher prevalence of irritability, hyperactivity and anxiety in index study could be attributed to the lack of peer-group support, lack of recreational and academic activities during the lock-down.

Near about two-third of the children acquired various new skills during lockdown, however, they also engaged more in mobile phones (63.4%) and watched television (58.1%) compared to their usual self during lockdown. This finding was corroborated by another Indian survey in which, 45% respondents reported that their children's exposure to screen increased to a great extent [9]. In index study, near about one-tenth of the children were engaged for more than 3 hours in mobile or television. This finding was alarming considering the deleterious effects of screen exposure of more than 3 hours in this age group. New skills acquisition could be contributed to the absence of domestic support for the parents who encouraged their children to learn self-help skills and also to the availability of time to learn such skills as the schools were shut down and academic burden was much less. Only one-fourth of the children had scope for outdoor sports activity during lockdown. This could again encourage the children to get hooked onto the screen. Majority of the parents spent at least 30 minutes with their children playing indoor games. This could explain to some extent that the children were able to cope well with this lockdown. Three-fourth of the children were attending online classes as schools were shut down. Near about one third of the children were spending more than two hours in doing those classes and completing the assignments given. This helped the children in spending a considerable portion of their time in a day in some meaningful activity which otherwise would have been difficult. Majority of the children also indulged in creative works during lockdown period. Near about two-third and one-third of the children reported change in their sleeping and

feeding habit respectively. Studies from India and abroad also reported a change in feeding and sleeping habit during lockdown [9-11].

Majority of the male and female children coped well with the lockdown. The behavioural impact of lockdown was seen equally on male and female children and adolescents. This could be due to the increased bond between children and their parents as they were able to spend more time together in doing the household chores and watching television as reported by a recent survey [9].

In view of the above findings, children and adolescents should be made to follow a consistent daily routine where they should get equal opportunities to read, play, rest and engage in physical activities. Parents should spend a considerable period of time with their children to make up for the absence of friends and school. Their access to news related to COVID 19 should be limited in view of anxiety and negative affect. Exposure to screen should be limited as it would have a long-term deleterious effect on mental health and they should be encouraged to read storybooks and engage in non-gadget related indoor activities. Alternatively, they can also engage in creative pursuits like, art, dance, music etc. They should be encouraged to have group video calling with their peers at a specified interval to keep afloat their sense of belongingness. Parents should develop appropriate preventive measures and coping mechanisms which family should follow as a team.

Governmental agencies should rope in paediatrician, psychiatrists, psychologists, other health workers e.g. ASHAs (Accredited Social Health Activist), ANMs (Auxilliary Nursing Midwifery), teachers and non-governmental organisations (NGOs) to reach out to children during such extraordinary restrictive measure such as 'lockdown'. Particularly children with special needs will be needing the assistance much more. There should be active collaboration between parents and those agencies to ensure that the health care need of children are met and mental health issues e.g. anxiety, depression, irritability, conduct problems are taken care of.

Teachers in particular during the online classes can enquire about health issues of the students. Online parent-teacher meeting will go a long way in addressing such problem. Broadcasting agencies and social media platforms can promote animated videos allaying concerns of children and encourage good habits during such pandemic.

The index study provided an overview of psychological impact of lockdown on children and adolescents at a time when everybody was trying to adjust to 'new normal' and hence was reflective of the ground scenario. By conducting the survey through WhatsApp and Google From, authors were able to reach a greater number of people when physical interviewing was impossible. The data obtained from index survey largely corroborated with the findings of surveys and studies conducted in India and abroad and lends credibility to it. However, the survey had certain limitations which is inherent to surveys conducted through WhatsApp [17]. The questions were open to interpretation by the respondents. The findings cannot be generalized because the population is not clearly defined as the recipients could have forwarded the link to others as well. Information about the non-responders are also not available which precludes matching with the responders and thus not eliminating selection bias.

To conclude, COVID-19 pandemic poses an extraordinary medical challenge to the mankind. Lockdown is an extraordinary administrative measure to contain the spread of the infection which was hitherto unseen to most of us. This survey was an attempt to peek into the psychological impact of the lockdown on children and adolescents while it was still in force. Index survey suggested that, at least one-third of the children and adolescents demonstrated more behavioural problems than earlier due to lockdown.

Future studies should look into the psychological impact of lockdown in a larger section of children representative of whole of India. Use of structured and validated instruments and in person interview to assess the psychological impact will lend more credence to such study.

**Acknowledgement: None**

## **Conflict of Interest: None declared**

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