



Original Research Article

Covid 19 pandemic-lockdown and its psychological effects on children age group 4 to 10 years, a cross-sectional study from a school in Central India

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ABSTRACT

Aim: This study will provide an insight into the psychological impact of lockdown on young children.

Materials and Methods: The current study is a questionnaire-based cross-sectional study. The research was done among parents of children ranging in age from 4 to 10 years old who attend various schools in Nagpur city. The research ran from March 2021 to August 2021, for a total of six months. The study enlisted the participation of parents of kids aged 4 to 10 years old.

Results: Sadness significant, found that children of both working parents are significantly sad as compared to non-working or only any 1 parent working ($p=0.008$). Also, children who are using smartphones for <2hours for playing games are significantly sad than others. ($p=0.001$). Aggressiveness was significantly ($p=0.002$). Children of <7 years are significantly more aggressive than >7years. Anxiety was significantly more among females compared to male children ($p=0.03$). Also, children belonging to single parents and joint families were significantly more anxious compared to nuclear families ($p=0.04$).

Conclusion: The lockdown due to the Covid-19 pandemic has caused profound psychological effects and has increased the rates of depression, anxiety, sadness, and aggressiveness in children.

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1. Introduction

In a relatively short time, the COVID-19 epidemic has radically changed the life of the worldwide population.¹ Unlike adults, children are not unaffected by the COVID-19 pandemic's devastating effects.^{2,3} They are afraid, apprehensive, and have significant alterations in their habits, along with physical and social isolation.⁴ It is critical to understand their behaviors and feelings in order to effectively meet their needs, as companionship and social connection are necessary for children's natural psychological development.^{3,5}

To check the spread of the virus, many countries have implemented various preventive strategies including

serious social restrictions.¹ The most significant public health measure implemented during this pandemic has been extended periods of 'lockdown' where whole populations have been advised to remain in their households. In India, the lockdown was strictly imposed from March 2020, and gradually eased around the month of September 2020. As the second wave of pandemics has started to occur in a few states of India particularly Maharashtra, many districts in the state have started imposing strict lockdown. In Nagpur district, the strict lockdown was implemented once 22nd March 2021.

To interrupt the chain of transmission of this deadly sickness, the lockdown included the closure of schools, educational institutes, and public utility areas.⁶ Prior to the lockdown, children and teens learned mostly via one-on-one interactions with mentors and peer groups all throughout

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the world. Countrywide school and institution closures have touched more than 91 percent of the world's student population.⁷ As a result of disruptions in their schooling, physical exercise, and social opportunities, children and adolescents who are restricted to their homes suffer uncertainty and worry.³ Being away from a structured educational setting for an extended length of time produces disruption in routine, boredom, and a lack of new ideas for engaging in various academic and extracurricular activities.

Because they are unable to play outside, physically meet friends, or participate in in-person school events, some of the youngsters have exhibited decreased levels of affect.⁷⁻⁹ It's expected that children would avoid returning to school once the lockdown is lifted and that they will have trouble re-establishing contact with their mentors once the schools reopen. As a result, the restriction of their movement may have a long-term detrimental impact on their general psychological well-being and social development.^{7,10} It's not too late to avert them.¹⁰ The WHO also highlighted the need to invest in mental health services during the pandemic.¹¹ In addition to the illness itself, this pandemic has presented a number of obstacles, with mental health issues at the forefront. Apart from the mental health issues caused by the pandemic, addressing psychiatric problems is a major concern in and of itself.¹²

Understanding the effects of the lockdown, as well as subsequent school closures, on the mental health and well-being of children and young people during the COVID-19 epidemic is critical. (6) However, the long-term effects of such policies on children's well-being remain unknown. (1). There are some studies on the impact of lockdown on the mental health of adults and adolescents but very few studies have focussed on young children. Therefore, this study will provide an insight into the psychological impact of lockdown on young children.

2. Materials and Methods

The ethical clearance from the institutional review board was obtained before the commencement of the study. The participants were invited to participate in the study and informed consent was obtained after explaining the details of the study. The data privacy, security, anonymity, and confidentiality were ascertained through standardized procedures. The data security was ensured through the safe storage of the data and limiting access of the data only to the investigator.

2.1. Study design, duration, and participants

The current study is a questionnaire-based cross-sectional study. The research was done among parents of children ranging in age from 4 to 10 years old who attend various schools in Nagpur city. The research ran from March 2021 to August 2021, for a total of six months. The study enlisted

the participation of parents of kids aged 4 to 10 years old who were willing to participate. Incomplete forms of the questionnaires and wrong answers or missing responses or a child reported as infected with COVID-19 were excluded from the analyses. Also, those with some physical or mental disability (developmental delay, Autism spectrum of disorders, etc) and if the parents were not willing to participate in the study, were excluded from the study.

2.2. Sample size and sampling technique

In a study conducted by Ghanamah et al in 2020 among Arab Israeli children for assessing the behavioural impact of the lockdown imposed by the pandemic, it was observed that 46.2% of the study population experienced one or the other psychological and behavioral changes. Based on this prevalence, with a 5% margin of error at a 95% confidence level for a two-tailed hypothesis, the expected sample size was obtained to be 385.

2.3. Sampling technique

The respondents were selected using a multi-stage random sampling procedure. As a part of the first step, schools were randomly selected using a random number table. In the second stage of sampling, the parents of all the consecutive children between the age group of 4 to 10 years (from junior kindergarten to fourth grade) from the selected schools and who were not diagnosed with a physical or psychological problem (like developmental delay, Autism spectrum of disorders, Attention deficit hyperactivity disorders) were invited to participate in the study.

2.4. Data collection tools and procedure

The data was collected online using predesigned and validated Google forms. The questionnaire was tested and validated from the members of the teaching staff members at our institute who had children in the age group of 4-10 years. It was also pilot-tested in a sample of 25 parents from the selected schools before initiation of the final data collection. The suggestions from the teaching faculty members and the parents were incorporated to assuring the simplicity of the language and understanding of the questions in order to make it more user-friendly.

All the participating schools were provided with the online consent form and the Google form links accompanied by an audio clip introducing the research goals that were shared with the parents (primary survey respondents) through the online classes' platforms used by the schools respectively. For those who did not respond on these platforms the link of the designed Google Form of the survey was shared on social media like WhatsApp. They were requested to fill the questionnaire within a time span of 15-20 days.

The questionnaire is divided into five sections: I socio-demographic questionnaire (age, gender, educational level, socio-economic situation, occupation, location of residence, and whether or not any family member or the kid was Corona positive or in quarantine); Psychological effects were assessed based on semi-structured questionnaire for sadness, aggressiveness, depression and anxiety in children. All the responses were in dichotomous format of yes and no. Questionnaire had six questions for answering sadness, seven questions for aggression, five questions for depression and anxiety respectively. The responses were marked on a Likert scale. Those who responded often and always were considered as positive and those who responded sometimes, rarely and never were considered negative for the question. Those who responded positive for more than three questions in each condition were considered positive for the concerned attribute like sadness, depression, anxiety, etc. In order to study the associations of the socio-demographic factors and other covariates like the type of family, siblings, education and occupation of parents, time spent with children, etc. on the psychological condition of the children cut off points for each of the psychological domains like sadness, aggressiveness, anxiety, and depression were devised using which if the score on the questions determining these attributes was greater than 50%, then the child was considered to be having the attribute in question.

2.5. Data analysis

The data was received by the investigator after the completion of the forms by the respondents. This data was then exported to Microsoft Excel for further analysis and drawing inferences. The basic demographic characteristics of the respondents and the children were described using descriptive statistics. The chi-square test was used to measure the association of the variables, with children's behavioral, emotional and psychological health.

3. Results

In these study gender wise 96 (49.48%) were male and 98 (50.52%) were female child. Overall, 96 (49.48%) of study subjects belonged to the nuclear family, 89(45.87%) belongs to joint and 9 (4.62%) belongs to single parent family. Among majority children, 97(50%) only fathers are working, while in 93(47.94%) both parents are working. In these study i.e. 126(64.95%) belongs to upper middle class and only 4 (2.06%) of study subjects belongs to lower socioeconomic class. 111(57.22%) of study subjects were having siblings. (Table 1)

Table 2 depicts the prevalence of psychological effect due to COVID 19 lockdown in children. Prevalence of Anxiety, sadness, depression and aggressiveness was 74.23%, 68.04%, 58.25% and 53.09% respectively.

Table 1: Socio-demographic profile of study subjects

Variables	Frequency (n=194)	Percentage
1. Gender of the child		
a. Male	96	49.48
b. Female	98	50.52
2. Relationship with child		
a. Father	73	37.63
b. Mother	116	59.79
c. Grandparents	1	0.52
d. Other	4	2.06
3. Type of family		
a. Nuclear	96	49.48
b. Joint	89	45.88
c. Single parent	9	4.64
4. Education of parents		
a. Primary	15	7.73
b. Lower secondary	4	2.06
c. Upper secondary	14	7.22
d. Bachelor's degree	53	27.32
e. Master's degree	85	43.81
f. Doctoral degree	23	11.86
5. Working status of parents		
a. Both are working	93	47.94
b. Only father is working	97	50.00
c. Only mother is working	2	1.03
d. Both unemployed	2	1.03
6. Socio economic status		
a. Upper	18	9.28
b. Upper middle	126	64.95
c. Lower middle	40	20.62
d. Upper lower	6	3.09
e. Lower	4	2.06
Any sibling of the child		
a. Yes	111	57.22
b. No	83	42.78

Table 2: Prevalence of Sadness, Aggressiveness, Depression and Anxiety

Psychological effect	Frequency (n=194)	Prevalence
Sadness	132	68.04%
Aggressiveness	103	53.09%
Depression	113	58.25%
Anxiety	144	74.23%

Table 3 shows the distribution of sadness in children during lockdown. It was found that children of both working parents are significantly sad as compared to non-working or only any 1 parent working ($p=0.008$). Also, children who are using smartphones <2hours for playing games are significantly sad than others. ($p=0.001$)

Table 4 depicts the distribution of aggressiveness in children during lockdown ($p=0.002$). Children of <7 years are significantly more aggressive than >7 years.

Table 5: Distribution of depression in children during lockdown

Psychological effect	Depression present	Depression absent	X ² P-value
Age			
<7(n=95)	49	46	3.404
>7 (n=99)	64	35	0.06
Gender			
Male (n=96)	50	46	2.969
Female (n= 98)	63	35	0.08
Siblings			
Present (n=111)	67	44	0.476
Absent (n=83)	46	37	0.49
Type of family			
Nuclear(n=96)	59	37	5.457
Joint (n=89)	46	43	0.065*
Single parent (n=9)	8	1	
Working status of parents			
Only father is working (n=97)	60	37	1.076
Only mother is working (n=2)	1	1	0.78
Both working (n=93)	51	42	
Both unemployed (n=2)	1	1	
Smart phone usage			
<2 hours	73	62	4.122
2- 4 hours	28	15	0.24
4-6 hours	8	2	
>6 hours	4	2	
Socioeconomic class			
Upper (n=18)	13	5	2.466
Upper middle (n=126)	70	56	0.65
Lower middle (n=40)	25	15	
Upper lower (n=6)	3	3	
Lower (n=4)	2	2	

Table 5 shows the distribution of depression in children during lockdown. None of the variable was found to be significant for depression.

Table 6 illustrates anxiety in children during lockdown. It was observed that anxiety was significantly more among females compared to male children ($p=0.03$). Also, children belonging to single parent and joint family were significantly more anxious compared to nuclear families ($p=0.04$).

4. Discussion

A cross-sectional questionnaire-based study was conducted to study the psychological impact of lockdown among children aged 4 – 10 years. The psychological parameters like sadness, aggressive behavior, anxiety and depression were taken into account in the present study to find out the impact of lockdown on the children.

The sudden close down of routine activities has not only impacted the adults but has also reflected children adversely. The closure of schools, playgrounds, and outdoor activities has led to 24 hours of home confinement for the children with parents. Shah et al 2020 have stated that Children's mental health has been impacted in a variety of ways since

this unusual scenario has altered the way kids generally develop, learn, play, interact, and regulate emotions.¹³ Home confinement with no activities and parents' stress due to the pandemic had a paramount effect on the psychology of the children

In this study 96(49.48%) were male and 98(50.52%) were female children. Overall 96(49.48%) of study subjects belonged to the nuclear family, 89(45.87%) belongs to the joint, and 9(4.62%) belonged to single parent families. Among the majority of children, 97(50%) only the father was working, while in 93(47.94%) both parents are working. In this study 126(64.95%) belongs to the upper-middle class and only 4(2.06%) of the study subjects belong to the lower socioeconomic class. 111(57.22%) of study subjects were having siblings.

Prevalence of Anxiety, sadness, depression, and aggressiveness was 74.23%, 68.04%, 58.25%, and 53.09% respectively. Li Duan et al (2020) also reported that During the COVID-19 epidemic, the prevalence of clinical depression in children and adolescents was 22.28 percent, far higher than the commonly expected frequency, and total anxiety levels in children were 4.01 ± 3.03 . They estimated that roughly 25%–50% of depressed youth displayed

Table 6: Distribution of Anxiety in children during lockdown

Psychological effect	Anxiety present	Anxiety absent	X ² P-value
Age			
<7(n=95)	72	23	0.237
>7 (n=99)	72	27	0.62
Gender			
Male (n=96)	79	19	4.220
Female (n= 98)	65	31	0.03
Siblings			
Present (n=111)	81	30	0.213
Absent (n=83)	63	20	0.64
Type of family			
Nuclear (n=96)	65	31	6.17
Joint (n=89)	70	19	0.04
Single parent (n=9)	9	0	
Working status of parents			
Only father is working (n=97)	66	31	5.695
Only mother is working (n=2)	2	0	0.12
Both working (n=93)	74	19	
Both unemployed (n=2)	2	0	
Smart phone usage			
<2 hours	93	42	7.361
2- 4 hours	37	6	0.06
4-6 hours	9	1	
>6 hours	5	1	
Socioeconomic class			
Upper (n=18)	16	2	4.119
Upper middle (n=126)	90	36	0.39
Lower middle (n=40)	30	10	
Upper lower (n=6)	4	2	
Lower (n=4)	4	0	

comorbid anxiety disorders and about 10%–15% of anxious youth had depression.⁹ Morgul et al 2020 stated that the caregivers reported sadness in 43.4% of children; anxiety in 45.2% of children and 29.7% of children had aggressive behavior.¹ Panda et al (2020) also reported similar findings regarding children's psychological health, they stated that 34.5%, 41.7%, 42.3%, and 30.8% of children were found to be suffering from anxiety, depression, irritability, and inattention.² The findings of the above studies were similar to the present study. Most of the authors reported that the children face various psychological issues like irritability, restlessness, anger, anxiety, sadness, and worry. The frequently reported symptoms by children were anxiety, depression, lethargy, impaired social interaction, and reduced appetite.^{1,3}

It was observed that anxiety was significantly more among females compared to male children ($p=0.03$). Similar findings were reported by Li Duan et al (2020).⁹ This may be due to the home confinement with no outdoor activities and no interaction with friends. Panda et al (2020) have reported that the anxiety was significantly higher in females than male children during the lockdown.² Also children belonging to single parent and joint families were

significantly more anxious compared to the nuclear family ($p=0.04$). Imran et al (2020) reported that the parent's stress reflects on the children which they can display as misbehavior, oppositional/defiant behavior, and temper tantrums.

When the association of sadness was seen with other variables, it was observed that children whose both parents were working were significantly more sad ($p=0.008$) than those whose either one parent or no parent was working. Singh et al (2020) have reported because of the lockdown, which caused a disruption in their routine, the youngsters have grown clingier, more attention-seeking, and more reliant on their parents. Children who were using smartphones for less than 2 hours were also found to be sadder ($p=0.001$). The working parents though at home were busy working from home and confined to their rooms to avoid disturbance from children, this may have led to sadness in children as the parents were not available. The children in the lockdown were not able to go out and hence were addicted to gadgets and their restricted use would have led to sadness.⁶

The present study also reported that the children younger than 7 years were more aggressive than those with ages

Table 3: Distribution of Sadness in children during lockdown

Psychological effect	Sadness present	Sadness absent	X ² P-value
Age			
<7(n=95)	68	27	1.071
>7 (n=99)	64	35	0.30
Gender			
Male (n=96)	60	36	2.683
Female (n= 98)	72	26	0.10
Siblings			
Present (n=111)	71	40	1.983
Absent (n=83)	61	22	0.15
Type of family			
Nuclear	63	33	0.574
Joint	63	63	0.75
Single parent	6	3	
Working status of parents			
Only father is working (n=97)	62	35	11.61
Only mother is working (n=2)	0	2	0.008*
Both working (n=93)	70	23	
Both unemployed (n=2)	0	2	
Smart phone usage			
<2 hours	84	51	15.21
2- 4 hours	37	6	0.001
4-6 hours	9	1	
>6 hours	2	4	
Socioeconomic class			
Upper (n=18)	12	6	
Upper middle (n=126)	88	38	2.038
Lower middle (n=40)	25	15	0.72
Upper lower (n=6)	5	1	
Lower (n=4)	2	2	

more than 7 years. This may be due to the smaller children cannot express their feelings as the older ones.

5. Conclusion

The lockdown due to the Covid-19 pandemic has caused profound psychological effects and has increased the rates of depression, anxiety, sadness, and aggressiveness in children. The anxiety was significantly higher in female children, while the sadness was more common in children whose both parents were working and who were spending less time on the internet. Children below 7 years behaved more aggressively than above 7 years. Children belonging to single-parent and joint families were significantly more anxious compared to nuclear families.

Table 4: Distribution of Aggressiveness in children during lockdown

Psychological effect	Aggressiveness present	Aggressiveness absent	X ² P-value
Age			
<7(n=95)	55	40	9.024
>7 (n=99)	36	63	0.001
Gender			
Male (n=96)	46	50	0.077
Female (n= 98)	45	53	0.78
Siblings			
Present(n=111)	50	61	0.361
Absent(n=83)	41	42	0.54
Type of family			
Nuclear(n=96)	44	52	0.3176
Joint(n=89)	42	47	0.85
Single parent(n=9)	5	4	
Working status of parents			
Only father is working (n=97)	42	55	1.016
Only mother is working (n=2)	1	1	0.79
Both working (n=93)	47	46	
Both unemployed (n=2)	1	1	
Smart phone usage			
<2 hours	56	79	5.985
2- 4 hours	25	18	0.11
4-6 hours	7	3	
>6 hours	3	3	
Socioeconomic class			
Upper (n=18)	10	8	2.718
Upper middle (n=126)	62 15	64 25	0.60
Lower middle (n=40)			
Upper lower (n=6)	2	4	
Lower (n=4)	2	2	

6. Limitations

This study does not represent the general population as the participants were from private English medium schools not from government or aided schools or local medium language schools. The sample size is small as the sample was mostly collected during the summer vacation period so very few parents responded to school mail. It is suggested that a similar study should be conducted on large scale including urban and rural setups and all types of schools.

7. Source of Funding

None.

8. Conflicts of Interest

There is no conflict of interest.

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