

EFFECT OF COVID-19 ON MENTAL HEALTH OF CHILDREN WITH COMMUNICATION DISORDERS IN BANGLADESH

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Abstract

The outbreak of COVID-19 imposed an adverse effect on mental health across the globe, and when it comes to children with special needs facing a rapid change in their daily routine, an unfulfillment of their higher healthcare needs and inability to communicate appropriately may increase the risk. This study aims to examine the effect of COVID-19 on mental health in children with Communication Disorders in Bangladesh. Data were collected over the phone among 210 parents from urban and rural areas having a child with Communication Disorders. The child's general socio-demographic information and clinical characteristics were reported through a bivariate test, while the risk factors associated with developing anxiety were measured using Generalized Anxiety Disorder (GAD-6) scales. The result shows that children aged 11-15 suffer from severe anxiety (28.6%), and children who do not possess any language level 20(9.5%) have severe anxiety. Similarly, among children from families with Covid-19 positivity, 42(20.0%) of them have a severe level of anxiety. Therefore, counseling services should be provided to the families of COVID-19 positivity. Besides, speech and language therapy services must be ensured, as children without a language level are more prone to anxiety.

Keywords: COVID-19, Mental Health, Children with Communication Disorders, Bangladesh

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1. Introduction

The outbreak of a newly formed coronavirus named COVID-19 was first reported in Wuhan, China, on December 31, 2019, undergoing a rapid spread and resulting in a pandemic declared by the World Health Organization [WHO] in March 2020 (Liu et al., 2020; WHO, 2020). In Bangladesh, the transmission was on the rise after the first reported case on March 7, 2020, by the country's epidemiology institute, the Institute of Epidemiology, Disease Control and Research (IEDCR); on March 25, 2020, the government declared the implementation of lockdown to be enacted from March 26 (Anwar, Nasrullah & Hosen, 2020).

To ensure the safety of the people along with children maintaining social distancing and being confined at home by abstaining from outdoor activities becomes the best strategy for not getting infected with COVID-19 (Saxena, 2020). Considering children with Communication Disorders— an impairment in the ability to receive, send, process, and comprehend concepts or verbal and nonverbal with deteriorated hearing, language, and speech skills severity ranging from mild to profound (American Speech-Language-Hearing Association [ASHA], 1993) that includes Autism Spectrum Disorder (ASD), Down Syndrome (DS), Attention Deficit Hyperactivity Disorder (ADHD), Cerebral Palsy (CP) and so on. These children with Communication Disorders who follow a daily routine are more likely to be affected by the negative impact of mental health issues imposed by the pandemic because of their limitations in understanding (Aishworiya & Kang, 2021). So, it is imperative that sudden breakdowns in their way of living may cause mental health issues, as informed from a study by Merikangas et al. (2015) that persons with developmental disabilities are more prone to have mental health disorders such as anxiety, phobias, obsessive compulsive disorder (OCD), mood disorder and psychotic disorder. Being in a situation due to the Covid-19 outbreak creates adverse effects on ordinary human beings' physical and mental health, increasing their fear and concerns (Colizzi et al., 2020).

As mentioned earlier, children with ASD have pre-existing issues, including underdeveloped social skills or interaction to maintain social distance, because not having access to go outside due to lockdown and a suddenly changed routine can result in a deteriorated feeling, thus resulting mental health disorders (K. Patel, 2020; Narzisi, 2020). A study on special children and their families in the UK by Asbury et al. (2021) found that worries, mood changes, and behavior were daily in parents and children due to sudden social changes.

When it comes to the healthcare needs of children with developmental disabilities, the need is higher than that of normal children (Aishworiya & Kang, 2021). Heart defects, respiratory conditions, bowel conditions, musculoskeletal problems, hearing problems, and visual impairments are the common problems for children with Down Syndrome (Cleves et al., 2007; Frid et al., 2002; McGrath et al., 2011; Schieve et al., 2011; Thomas et al., 2011) and being at a higher risk of multiple health problems (Pikora et al., 2014; Schieve et al., 2011; Tenenbaum et al., 2012) more significant level of supports and therapy are must needed (Geelhoed, 2011; Marshall et al., 2015; Schieve et al., 2011) while UNICEF (2020) reports that significant complications may increase with underlying health conditions due to COVID-19 of children and adults with disabilities.

Aishworiya & Kang (2021) stated that children with developmental disabilities are to maintain regular therapy sessions and intervention services from centers or special schools. However, due to the sudden lockdown, these services are being disrupted, and managing homecare therapy has also become tougher (Dhiman et al., 2020). As Tohidast et al. (2020) mentioned, the current situation hampers speech therapy services, as one-to-one communication is necessary to conduct a therapy session. Thus, triggering the risk of having mental health issues in children with Communication Disorders.

Bangladesh is one of the major countries which signed and ratified the United Nations Convention on the Rights of Persons with Disabilities and enacted the Persons with Disabilities Rights and Protection Act in 2013, which is mentioned to provide the best healthcare possible for persons with disabilities. However, when we look at the government allowance for mental health services here, we find that only 0.05% of the total annual budget is dedicated to this sector (WHO, 2017) which causes a crisis in providing mental health care. Therefore, the patient-psychiatrist ratio is too high (Hossain et al., 2020). On the bright side, to ensure the best mental health services and support Bangladesh Parliament sanctioned a new Mental Health Act and Mental Health Policy in 2018, which was approved by the Ministry of Health in 2019 introducing a psychosocial treatment model (WHO, 2020).

Most studies on Bangladeshi Communication Disorders affected children are based on their speech and language characteristics, behavioral issues, and intervention or management procedures. However, while searching extensively for related studies in Bangladesh, it was unfortunate that no prior studies were available. So, by bridging the gap, this study is the first to consider the mental health issues faced by children with Communication Disorders.

1.1 Objectives

This study aimed to examine the effect on the mental health of children with Communication Disorders during the COVID-19 outbreak in Bangladesh by the following:

- i. To find out the underlying factors impacting mental health issues faced by children with Communication Disorders.
- ii. To find out the relevancy of developing mental health issues with the aging of children with Communication Disorders.
- iii. To find out the relation between language development and mental health issues children with Communication Disorders face.

2. Methods

2.1 Participants

Using the random sampling (lottery method) technique, 270 parents of children with Communication Disorders who are enrolled with the Down Syndrome Society of Bangladesh located at Banasree, Dhaka, were chosen for the study. However, we were able to reach 210 parents finally for the telephone interview. Participants were from both urban and rural areas of Bangladesh. The age limit for children was 5 to 15 years as humans usually develop their ability to use different mental states, including beliefs, emotions, or intentions, commonly known as Theory of Mind (ToM) by four years of age (Westra & Carruthers 2018; Wimmer & Perner, 1983). For the sake of one of our objectives, children were classified into three age groups—5-10 years, 11-15 years, and ≥ 15 years.

The sample size of the study was determined by using the formula of Godden (Godden, 2004) as follows:

$$\begin{aligned}
 S &= \frac{z^2 p(1-p)}{M^2} \\
 &= \frac{1.645^2 * .5(1-0.5)}{0.05^2} \\
 &= \frac{2.706025 * 0.25}{0.0025} \\
 &= \frac{0.67650625}{0.0025} \\
 &= 270
 \end{aligned}$$

S= Sample size

Z= Standard normal deviation set at 90% confidence level= 1.65

P= Percentage of population picking a choice expressed as decimal= 50%=0.5

M= Margin of error=5%=0.05

2.2 Data Collection Procedure

The study was conducted from November 1, 2020, to January 15, 2021. Data were collected over the phone among 210 parents from urban and rural areas of Bangladesh having a child with Communication Disorders, as face-to-face interviews had to be avoided due to COVID-19. The questionnaire consisted of several parts, including socio-demographic information (age, sex, level of education, place of living, parenting couple status, number of children, number of earning members in the family, average monthly family income, and COVID-19 positivity among family members/relatives/neighbor), clinical characteristics of children (child's diagnosis, communication level, language level and behavioral changes before and after COVID-19 outbreak) and mental health-related information of the child. No economic motivation was given to the participants, and anonymity was maintained for confidentiality. With the consent of each participant, data collection was conducted, and they were informed that they could leave the interview at any time without giving any justification.

2.3 Characteristics of Children with Communication Disorders

There remain various difficulties of Communication Disorders faced by children, including speech disorders, e.g., articulation disorders (unusual production of speech sounds with substitutions, omissions, additions, or distortions), fluency disorders (phenomenal rate, rhythm, and repetitions in sounds, syllables, words, and phrases while speaking) and voice disorders (atypical vocal quality, pitch, loudness, and resonance); language disorders (compromised comprehension and production), e.g., the form of language (phonology, morphology, syntax), the content of language (semantics) and the usability of language in communication (pragmatics); hearing disorders (compromised auditory sensation due to impaired auditory system), e.g., deaf and hard of hearing; and central auditory processing disorders (ASHA, 1993).

2.4 Statistical Analysis

The bivariate test reported the general socio-demographic information and clinical characteristics of the child. At the same time, the risk factors associated with developing anxiety were measured using Generalized Anxiety Disorder (GAD-6) scales (e.g., My child worries about things, complains of having a funny feeling in his/her stomach, complains of feeling afraid, heart beating fast, child worries that something terrible will happen, & feels shaky) obtaining from the 47-item Revised Child Anxiety and Depression Scale (RCADS) (Chorpita et al., 2000) by using a multinomial logistic regression model. In this study, the adjusted odds ratio was reported by taking a 95% confidence interval where all statistical significance was set at ($p < 0.05$).

3. Results

Among the participants, there were 142 (67.6%) females and 68 (32.4%) males, while the majority of them were aged ≥ 15 years (48.6%) (Table 1). Most of the parents lived together (204; 97.1%) while only 6 (2.9%) of them had separation and had a higher level of education 158 (75.2%) living most in urban 186(88.6%) areas than in rural 24 (11.4%). If we look into the financial conditions and COVID-19 positivity among family members, which may play roles in increasing anxiety in this situation, 88 (41.9%) participants were in the 10000-30000 cluster, 94(44.8%) in the 30000-50000 cluster and 28 (13.3%) were in \Rightarrow 50000 clusters and were 86 (41.0%) families had COVID-19 positivity which is not less.

While we looked for the anxiety level of children with Communication Disorders, it was found that among 40 (19.0%) children with ASD, 20 (9.5%) children had severe levels of anxiety and 12 (5.7%) had moderate levels (Table 1). Similarly, amongst 90 (42.9%) children with DS, 46 (21.9%) children had a severe level of anxiety, and 24 (11.4%) had a moderate level. Likewise, in children with CP, among 56 (26.7%) children, 32 (15.2%) had severe levels, and 6 (2.9%) had moderate levels. Lastly, all 4 (1.9%) children with ADHD were found to have a severe level of anxiety.

In this present study, we happened to find children with Communication Disorders in a comorbid condition where all 4 (1.9%) children with ASD who had vision impairment faced an extreme level of anxiety (Table 1); all 4 (1.9%) children with ASD who had CP at the same time faced an extreme level of anxiety.

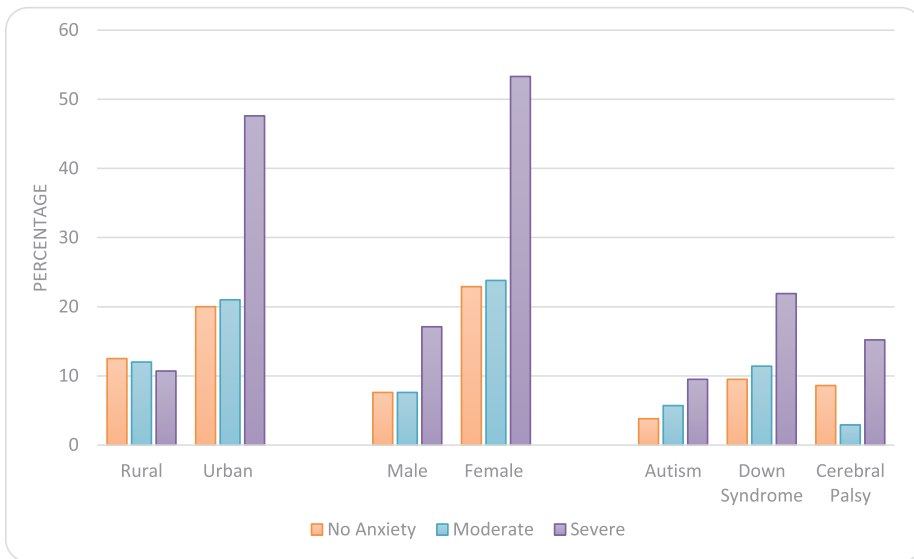


Figure 1. Level of General Anxiety Disorder by Background

Among 80 (38.1%) children having developed words, 38 (18.1%) of them had severe levels of anxiety, and 20 (9.5%) had moderate levels (Table 1). Furthermore, the child’s language level shows us that 32 (15.2%) children had no developed word, and 20 (9.5%) had severe anxiety. 40 (19.0%) children could combine at least two words commonly known as Phrases, of whom 22 (10.5%) had a severe level of anxiety, and 8 (3.8%) had a moderate level. Lastly, 58 (27.6%) children could make a sentence of three-word combinations, 32 (15.2%) of them had a severe level of anxiety, and 16 (7.6%) had a moderate level.

Table 1. Background characteristics of participants

Characteristics	Total	No Anxiety	Moderate	Severe	<i>p</i>
Place of Residence					0.938
Rural	24(11.4)	6(2.9)	6(2.9)	12(5.7)	
Urban	186(88.6)	42(20.0)	44(21.0)	100(47.6)	
Age of Respondents					0.012
5-10 Years	12(5.7)	0	6(2.9)	6(2.9)	
11-15 Years	96(45.7)	18(8.6)	18(8.6)	60(28.6)	
≥15 Years	102(48.6)	30(14.3)	26(12.4)	46(21.9)	
Gender of the Children					0.987

Male	68(32.4)	16(7.6)	16(7.6)	36(17.1)	
Female	142(67.6)	32(15.2)	34(16.2)	76(36.2)	
Parents Education Level					0.045
No formal education	4(1.9)	0	0	4(1.9)	
Primary	24(11.4)	4(1.9)	2(1.0)	18(8.6)	
Secondary	24(11.4)	4(1.9)	4(1.9)	16(7.6)	
Higher	158(75.2)	40(19.0)	44(21.0)	74(35.2)	
Parenting Couple Situation					0.036
Married Live To- gether	204(97.1)	48(22.9)	46(21.9)	110(52.4)	
Separated	6(2.9)	0	4(1.9)	2(1.0)	
Family Monthly Income					0.443
10000-30000	88(41.9)	18(8.6)	24(11.4)	46(21.9)	
30000-50000	94(44.8)	26(12.4)	18(8.6)	50(23.8)	
=>50000	28(13.3)	4(1.9)	8(3.8)	16(7.6)	
Any Members Diagnosed COVID-19 Positive					0.452
Yes	86(41.0)	20(9.5)	24(11.4)	42(20.0)	
No	124(59.0)	28(13.3)	26(12.4)	70(33.3)	
A child Diagnosed with CD					0.005
Autism	40(19.0)	8(3.8)	12(5.7)	20(9.5)	
Down Syndrome	90(42.9)	20(9.5)	24(11.4)	46(21.9)	
Cerebral Palsy	56(26.7)	18(8.6)	6(2.9)	32(15.2)	
ADHD	4(1.9)	0	0	4(1.9)	
Both Autism and Vision Impairment	4(1.9)	0	0	4(1.9)	
Both Autism and CP	4(1.9)	0		4(1.9)	
Others	12(5.7)	2(1.0)	4(1.9)	6(2.9)	
Child's Communication Level					0.154
Verbal	110(52.4)	24(11.4)	26(12.4)	60(28.6)	
Non-verbal/Sign	100(47.6)	24(11.4)	22(10.5)	54(25.7)	
Child's Language Level					0.687
No word	32(15.2)	6(2.9)	6(2.9)	20(9.5)	
Word Level	80(38.1)	22(10.5)	20(9.5)	38(18.1)	
Two words /Phrase Level	40(19.0)	10(4.8)	8(3.8)	22(10.5)	
Three words/Sentence Level	58(27.6)	10(4.8)	16(7.6)	32(15.2)	

CD stands for Communication Disorders

CP stands for Cerebral Palsy.

ADHD stands for Attention Deficit Hyperactivity Disorder

3.1 Risk Factors

Increasing with children's age, anxiety disorders have been increasing. Children aged 11 to 15 years found higher odds of being suffered from anxiety disorders respectively (aOR=1.11, 95% CI: 1.09-2.32, $p=0.024$) and (aOR=1.51, 95% CI: 1.23-4.32, $p=0.001$) (Table 2). Children of higher educated parents were more likely to suffer from anxiety disorder moderately (aOR=1.19, 95% CI: 1.01-1.14, $p=0.012$) and severely (aOR=2.17 95% CI: 1.43-11.03, $p<0.001$). Children from higher-income families were more likely to suffer from anxiety disorder moderately (aOR=1.39, 95% CI: 1.16-2.05, $p=0.027$). Children with different communication disorders were found to be strongly associated with developing an anxiety disorder. The higher odds found children with both autism and CP at 3.19 times. The children who do not possess any level of language were more likely suffering from anxiety disorder moderately (aOR= 1.10, 95% CI: 1.02-5.67, $p=0.001$), severely (aOR=2.48, 95% CI: 1.20-3.67, $p=0.001$). Children living in a family where any members diagnosed with COVID-19 positive found (aOR=1.51, 95% CI: 1.15-4.37, $p<0.001$) and (aOR=1.78 95% CI: 1.14-2.67, $p<0.001$) times more risk of being suffered from anxiety disorder respectively as moderately and severely.

Table 2. Factors associated with GAD among children with communication disorders

Characteristics	Moderate		Severe	
	AOR (95% CI)	<i>p</i> -value	AOR (95% CI)	<i>p</i> -value
Place of Residence				0.547
Rural	5.741 (0.45-11.78)	0.118	0.54 (0.10-2.85)	0.464
Urban (Ref.)	1.00		1.00	
Age of Respondents				
5-10 Years	1.49 (0.45-4.94)	0.519	1.09 (1.04-4.94)	0.019
11-15 Years	1.11 (1.09-2.32)	0.024	1.51 (1.23-4.32)	0.001
≥15 Years (Ref.)	1.00		1.00	

Gender of the Children

Male	1.67 (0.76-2.11)	0.128	0.87(0.35-2.17)	0.765
Female (Ref.)	1.00		1.00	

Parents Education**Level**

No formal education	0.23 (1.11-2.10)	0.999	1.33 (1.15-2.11)	0.992
Primary	0.51 (0.03-0.85)	0.038	0.53 (0.05-0.62)	0.018
Secondary	1.19 (1.01-1.14)	0.012	2.17 (1.43-11.03)	<0.001
Higher (Ref.)	1.00		1.00	

Parenting Couple**Situation**

Married Live Together	1.00 (0.52-0.97)	0.517	0.35 (0.13-0.88)	0.003
Separated (Ref.)	1.00		1.00	

Family Monthly Income

10000-30000	0.74 (0.14-4.01)	0.73	0.44 (0.11-1.77)	0.246
30000-50000	1.39 (1.16-2.05)	0.027	0.40 (0.11-1.48)	0.172
=>50000 (Ref.)	1.00		1.00	

Any Members Diagnosed with COVID-19 Positive

Yes	1.51 (1.15-4.37)	<0.001	1.78 (1.14-2.67)	<0.001
No (Ref.)	1.00		1.00	

Children Diagnosed with CD

Autism	1.23 (1.13-2.10)	<0.001	1.31 (1.12-2.19)	<0.001
Down Syndrome	1.51 (1.95-3.85)	<0.001	2.14 (1.95-5.85)	<0.001
Cerebral Palsy	1.19 (1.87-2.14)	<0.001	1.92 (1.10-4.14)	<0.001
ADHD	1.23 (2.11-2.10)	<0.001	2.44 (2.01-8.10)	<0.001
Both Autism and Vision Impairment	3.11 (1.03-2.85)	<0.001	2.11 (0.93-7.85)	<0.001
Both Autism and CP	2.19 (1.91-2.34)	<0.001	3.19 (1.91-12.34)	<0.001
Others (Ref.)	1.00		1.00	

Child Language Level

No word	1.10 (1.02-5.67)	0.001	2.48 (1.20-3.67)	0.001
Word Level	1.46 (0.11-6.24)	0.547	1.69 (2.11-6.24)	0.467
Combination of two words /Phrases Level	0.30 (0.61-1.45)	0.134	0.90 (1.61-4.45)	0.434

Combination of three words/Sentence Level (Ref.)	1.00	1.00
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4. Discussion

Most of our participants were aged ≥ 15 years old and living in urban areas with their parents, while most were female (Table 1). To measure the adverse effect on the mental health of children with Communication Disorders, scores were classified into three groups: no anxiety, moderate and severe, where we found most of the children with ASD, DS, and CP had a severe level of anxiety (Figure 1) which resembles the finding of a study by Merikangas et al., (2015) where they showed persons with disabilities have a higher risk of developing mental health disorder.

Age of the participants, place of residence, parents' education level, COVID-19 positivity among family members, higher income family, and language level of children were significantly related to the mental status of children with Communication Disorders (Table 1). As the children grow old, the risk of having an anxiety disorder is higher, as shown in Table 2 for the age cluster 11 to 15. Children with Communication Disorders living in urban areas are more likely to be affected by mental health-related problems in comparison to children in rural area's child (Figure 1). The lockdown was strictly maintained, and going out was forbidden for the children, so they stayed home (The Business Standard, 2020). On the other hand, there are no such strictly followed rules in rural areas. Instead, children are free to go out, play or visit relatives/friends (Anwar et al., 2020; Ranscombe, 2020). Educated parents remain busy with jobs compared to uneducated parents resulting in failing to fulfill the demand of their children and not giving enough time to communicate or interact (Ahmed, 2020; Yeasmin et al., 2020), causing children with Communication Disorders to be suffered from anxiety more.

This study also found that children with Communication Disorders from higher-income families tended to suffer more anxiety disorders (Table 2). Intention to have more income causes less time spent with their children (Mendez et al., 2004). COVID-19 positivity among family members negatively affects the mental status of children with Communication Disorders, as shown in Table 2, remaining more at risk of suffering from an anxiety disorder. Summing up to the impact of COVID-19 on the mental health of children with Communication Disorders, it came to attention that children with Communication Disorders having no development in language to communicate are more likely to be suffered from anxiety.

5. Conclusion

This study identifies that many children with Communication Disorders in Bangladesh suffer from mental health disturbances. Living in urban areas following strictly maintained rules along with higher educated parents worrying more about their special child, intention to income more, and COVID-19 positivity in family members might have directly influenced mental health issues faced by children with Communication Disorders. As we know, children with Communication Disorders have some chronologically underdeveloped skills needed to live everyday life. The ability to communicate has significantly impacted the mental health of these children with Communication Disorders, as the result shows. First of all, as children grow old, the rate of suffering from anxiety is higher; counseling services should be provided for both teenagers and countrymen of Covid-19 positivity as it is directly linked to an increase in the risk of anxiety suffered by family members, including children with Communication Disorders. Secondly, speech and language therapy services should also be ensured, as children without a language level are more prone to anxiety. The authors believe that the findings of this study will be beneficial for children with Communication Disorders to overcome mental health issues to lead an everyday life as we all do. As this present study did not consider the overcoming strategies of mental disturbances suffered by children with Communication Disorders in Bangladesh, we suggest comprehensive research on a more significant number of samples by finding and implementing overcoming strategies reflecting on the health care services and the support of mental health issues of children with Communication Disorders in Bangladesh.

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