

### Emotional and Behavioral Presentations among Adolescents Attending at Outpatient Departments of Bangabandhu Sheikh Mujib Medical University during COVID-19 Pandemic

#### **Abstract:**

The purpose of the research was to assess emotional and behavioral presentation among adolescents during the COVID-19 pandemic visiting outpatient departments of Bangabandhu Sheikh Mujib Medical University (BSMMU) and to compare the extent of emotional and behavioral symptoms among adolescents with key factors related to COVID-19. A cross-sectional study was conducted among adolescents from 11–17 years of age attending six outpatient departments of Bangabandhu Sheikh Mujib Medical University (BSMMU) from October to December 2020. A purposive sampling technique was applied and total 146 samples were selected. A validated Bangla SDQ scale of youth self-report measure (11 to 17 years) baseline version was used for data collection. Data were collected by a face-to-face interview. The study protocol was approved by Institutional Review Board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU). Both descriptive and inferential statistics were executed for data analysis by using SPSS-25 and MS Excel Software. On basis of SDQ-25 scale one-third respondents (34%) had emotional 31% had conduct and 17% had hyperactivity symptoms respectively during the COVID-19 pandemic. Among the adolescents who had a history of positive symptoms for COVID-19, 26.5% had hyperactivity symptoms, on the other hand adolescents who had no history of positive symptoms for COVID-19, only 9.8% had significant hyperactivity symptoms. There was a highly significant association ( $p=0.004$ ) present between behavioral (hyperactivity) symptoms and having a history of positive symptoms for COVID-19. Adolescents who had wariness about uncertainty of COVID-19 pandemic, 25% had significant emotional symptoms on the other hand who had no wariness about uncertainty of COVID-19 pandemic, 14.3% had emotional symptoms. There was significant association ( $p=0.048$ ) present between emotional symptoms with 'felt wariness about uncertainty of COVID -19 pandemic. There was also an association ( $p=0.035$ ) present between behavioral (hyperactivity) symptoms with 'relationship status among friends. A higher proportion of female adolescents had emotional and hyperactivity symptoms than male adolescents. However, male adolescents suffered mostly for conduct symptom compared to female. Adolescents attending in selected outpatient departments of BSMMU, were especially vulnerable to emotional and behavioral problem based on symptoms developing during COVID-19 pandemic.

**Keywords:** Emotional-behavioral symptoms, Adolescents, COVID-19 pandemic, Lockdown.

#### **Introduction:**

The COVID 19 has led to rapid, unexpected changes to the lives of millions of adolescents and many of them are suffering from emotional and behavioral problems during this pandemic due to significant changes to daily life (1). Recent studies have shown that the prevalence of behavioral problems among school-aged children in China varied from 4.7% to 10.3% in home quarantine during the COVID 19 outbreak, (2) and in India, effect of lockdown due to COVID19 on psychological health of young adults estimated that 16.9% and 18.2% of respondents are suffering from emotional and behavioral problems (3).

COVID-19 first identified in Bangladesh back on 8<sup>th</sup> March 2020, thereafter, country wide movement were restricted by the Government since 26<sup>th</sup> March 2020. Adolescent suffered a lot due to various associated factors, which arises for COVID-19 pandemic, such as movement restriction, closure of educational institution, prolonged home stay, infection and death of family members, losing livelihoods, lack of communication with peer, fear of contagion, and lack of information and awareness, financial crisis, uncertainty made their mental health more vulnerable (4). Among the adolescents of Bangladesh, prevalence of emotional, conduct and hyperactivity disorder were increased significantly during the lockdown period than before. According to a study of Bangladesh, prevalence of any predictive psychiatric disorder among adolescents before lockdown was 20.5% and within lockdown was 39.7% and the difference was highly significant ( $P < 0.001$ ) (5).

There were few studies conducted in Bangladesh to identify the impact of COVID-19 pandemic outbreak on mental health of adolescents, however, none of them done on adolescents attending at outpatient departments of a hospital or healthcare center for different health issues.

This study aimed to fill the gap to assess emotional and behavioral presentations among adolescents who are attending a tertiary care level hospital in Bangladesh during this COVID-19 situation. As Bangabandhu Sheikh Mujib Medical University is one of the largest tertiary care specialized hospital, data from this hospital can help to get an idea about distribution of emotional and behavioral presentations of adolescents during COVID-19 pandemic in our country.

## Materials and Methods

This cross-sectional study has been conducted among 11 to 17 years adolescent attending at six outpatient departments (Internal Medicine, Gynecology and Obstetrics, Skin and Venereal Diseases, Otolaryngology and Head-Neck Surgery, Eye department, General Pediatrics) of BSMMU for others health related problems from October to December 2020. The required sample size was 146. Non-probability sampling technique was used to collect data. Face-to-Face interview was taken in outdoor.

Prior conducting data collection, ethical clearance from Institutional Review Board of BSMMU (ref. no. BSMMU/2020/9375, date 25-10-2020) and Parent/Guardian's informed written consent and adolescent's informed written assent was taken from participants. A semi-structured modified questionnaire was used for data collection with validated Bangla version of the Strength and difficulties questionnaire (SDQ-25) scale for 11 to 17 years (6), which used to measure the presentation of emotional and behavior symptoms among 11 to 17 years adolescents. The SDQ-25 scale consists of 25 attributes, are divided among five scales of five items each, generating scores for emotional, conduct, hyperactivity, peer problems, and pro-social behaviors. Each questions answer option has, 0 = not true, 1= somewhat true, 2 = certainly true, where for each score lowest value was 0 and highest value was 10.

In this study, we have done assessment of emotional and behavioral presentations only. Emotional and behavioral presentation score were divided into 3 categories; emotional symptoms score, conduct symptoms score and hyperactivity symptoms score. This total score consists of total 15 items of SDQ-25 scale. Here, we consider cutoff margin, which is recommended to identify an adolescent (11 to 17) with high risk of emotional and behavioral problems (emotional symptoms > 5, conduct symptoms > 4 and hyperactivity symptoms > 6).

## Statistical Analysis:

Data analysis was done through Univariate (Frequency, percentage, mean, standard deviation) and bivariate analysis (Chi square test, significant level  $p < 0.05$ ) by using SPSS-25 and MS Excel Software.

## Results:

Figure 1 shows that among the 146 participants, 56.8% were female and remaining 43.2% were male respondents. Figure 2 shows that the age of majority of the respondents was between 15 to 17 years; mean age was 14.68 years. Table 1 shows that highest 97.3% was Muslim and 2.7% were Hindu and others. Respondents' education shows that 17.1% were from primary level, 57.5% were from secondary level and 25.3% were from higher secondary level. None of the participants was in 'no formal education' group.

Table 1: Religion, Marital status and Educational level of the respondents

Variables	Frequency(n)	Percentage (%)
<b>Religion</b>		
Islam	142	97.3%

Hindu and others	4	2.7%
<b>Marital Status</b>		
Unmarried	140	95.9%
Married	6	4.1%
<b>Education level</b>		
Primary	25	17.1%
Secondary	84	57.5%
Higher secondary	37	25.3%

The table 2 indicates that majority 26.5% of the female adolescents had emotional symptoms while only 12.7% of male adolescent had emotional symptoms. Majority of the respondents (26.9%) who were suffering from emotional problems – belongs to 15 - 17 years of age group.

However, male (19.0%) suffers mostly for behavioral (conduct) symptoms and within 15 to 17 years' age group about 17.9% respondents were suffering for conduct problems. Among all respondents, 12.0% of the female adolescents had behavioral (hyperactivity) symptoms while only 9.5% of male adolescent had behavioral (hyperactivity) symptoms and 12.8% adolescents in age group 15 to 17 years were suffering more in hyperactivity problem. There is no significant association of emotional, behavioral (conduct) and behavioral (hyperactivity) symptoms with age, sex, educational status and marital status of the respondents.

**Table 2: Association between socio-demographic characteristics of the respondents and emotional, conduct and hyperactivity symptoms**

Variable		Age		Sex		Education				Marital status	
		11-14	15- 17	Male	Female	No formal education	Primary	Secondary	Higher secondary	Single	Married
Emotional	Normal	59(86.8%)	57(73.1%)	55(77.3%)	61(73.5%)	0(0.0%)	22(88%)	68(81%)	26(70.3%)	113(54.8 %)	3(60%)
	Problem	9 (13.2%)	21(26.9%)	8(12.7%)	22(26.5%)	0(0.0%)	3(12.0%)	16(19.0%)	11(29.7%)	93(45.2%)	2(40%)
	<i>P-value</i>	<b>0.123</b>		<b>0.111</b>		<b>0.392</b>				<b>0.163</b>	
Conduct	Normal	60(88.2%)	64(82%)	51 (81%)	73 (88%)	0(0.0%)	23 (92%)	69(82.2%)	32(86.5%)	120(85.7 %)	4(66.7%)
	Problem	8(11.8%)	14(17.9%)	12(19.0%)	10(12.0%)	0(0.0%)	2(8.0%)	15(17.9%)	5(13.5%)	20(14.3%)	2(33.3%)
	<i>P-value</i>	<b>0.444</b>		<b>0.348</b>		<b>0.63</b>				<b>0.428</b>	
Hyperactivity	Normal	62(91.2%)	68(87.2%)	57(90.5%)	73(87.9%)	0(0.0%)	25 (100%)	73(86.9%)	32(86.5%)	125(89.3 %)	15(10.7%)
	Problem	6(8.8%)	10(12.8%)	6(9.5%)	10(12.0%)	0(0.0%)	0(0.0%)	11(13.1%)	5(13.5%)	5(83.3%)	1(16.7%)
	<i>P-value</i>	<b>0.728</b>		<b>0.438</b>		<b>0.368</b>				<b>0.751</b>	

figure 3 shows that among the three variables, around one-third respondents (34%) had emotional symptoms while 31% and 17% had conduct symptoms and hyperactivity symptoms respectively during the COVID-19 pandemic.

**Table 3** shows the association of emotional symptoms with adolescents' exposure to the COVID-19 pandemic situation. According to the table, there was no significant ( $p < 0.05$ ) difference or association present between emotional and behavioral (conduct) symptoms with the adolescents' exposure to the COVID-19 pandemic situation but there was an association of behavioral (hyperactivity) symptoms with adolescents' exposure to the COVID-19 pandemic situation.

Among the adolescents who had a history of positive symptoms for COVID-19, among them, 26.5% had hyperactivity symptoms which were in problem group. Again, adolescents who had no history of positive symptoms for COVID-19, among whom 9.8% had significant hyperactivity symptoms which were in problem group. There is a highly significant association ( $p = 0.004$ ) present between behavioral (hyperactivity) symptoms and having a history of positive symptoms for COVID-19.

**Table 3: Association between adolescents' exposure to COVID-19 pandemic situation and emotional, conduct and hyperactivity symptoms (P value <0.05)**

Variable	Emotional	Conduct		Hyperactivity		
	Normal	Problem	Normal	Problem	Normal	Problem
Diagnosed case as a Covid-19 positive case						
Yes	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
No	116(80%)	29(20.0%)	123(84.9%)	22(15.2%)	1(100.0%)	0(0.0%)
I don't know	0(0.0%)	1(100.0%)	1(100%)	0(0.0%)	129(88.4%)	16(11.0%)
P-Value	0.143	0.793		0.901		
Have any Positive symptoms for COVID-19						
Yes	28(82.3%)	6(17.6%)	31(91.1%)	3(8.8%)	29(85.2%)	5(26.5%)
No	88(78.6%)	24(21.4%)	93(83.1%)	19(17.0%)	111(90.2%)	11(9.8%)
P-value	0.708	0.509		0.004		
H/O Positive COVID -19 case in family						
Yes	11(78.5%)	8(57.1%)	14(92.9%)	1(7.1%)	12 (85.7%)	2(14.3%)
No	105(78.8%)	87(65.9%)	111(84.1%)	21(15.9%)	118(89.4%)	14(10.6%)
P-value	0.392	0.638		0.898		
H/O Death due to COVID-19 in family						
Yes	6 (75%)	2(25.0%)	8(100%)	0(0.0%)	5(62.5%)	3(37.5%)
No	110(79.7%)	28(20.3%)	116(84.1%)	21(15.9%)	125(90.6%)	13(9.4%)
P-value	0.946	0.406		0.416		
Stayed at home fulltime due to COVID-19 pandemic						
Less than or equal 5 month	76(75.3%)	25(24.8%)	82(81.2%)	19(18.8%)	89(88.1%)	12(11.9%)
More than 5month	40 (88.9%)	5(11.1%)	42(93.3%)	3(6.7%)	6(91.1%)	4(8.9%)
P-value	0.111	0.096		0.861		
H/O family faced social isolation due to COVID-19						
Yes	11(84.6%)	2(15.4%)	12(92.3%)	1(7.7%)	11(84.6%)	2(15.4%)
No	105 (79%)	28(21.1%)	112(84.2%)	21(15.8%)	119(89.5%)	14(10.5%)
P-value	0.89	0.638		0.831		
Home environment during COVID-19						
Never felt uneasiness	30(88.2%)	4(11.8%)	28(85.3%)	5(14.7%)	28(82.3%)	6(17.6%)

sometimes felt uneasiness	50(73.5%)	18(26.5%)	56(82.4%)	12(17.6%)	62 (91.2%)	6(8.8%)
almost always felt uneasiness	32(84.2%)	6(15.8%)	33(86.9%)	5(13.2%)	35 (92.1%)	3(7.9%)
always felt uneasiness	1(16.7%)	2(33.3%)	6(100.0%)	0(0.0%)	5(83.3%)	1(16.7%)
<b>P-value</b>	<b>0.517</b>		<b>0.7</b>		<b>0.619</b>	

**Table 4** shows the effect of COVID-19 with emotional, behavioral (conduct) and behavioral (hyperactivity) symptoms.

Adolescents who had wariness about uncertainty of COVID-19 among them 25% had significant emotional symptoms. Again, adolescents who had no wariness about uncertainty of COVID-19 pandemic, among them 14.3% had emotional symptoms. There is significant association ( $p=0.048$ ) present between emotional symptoms with 'felt wariness about uncertainty of COVID -19 pandemic. There is also an association ( $p=0.035$ ) present between behavioral (hyperactivity) symptoms with 'relationship status among friends.

**Table 4: Association between effect of COVID-19 during pandemic situation and emotional, conduct and hyperactivity (P value <0.05) symptoms**

Variable	Emotional		Conduct		Hyperactivity	
	Normal	Problem	Normal	Problem	Normal	Problem
<b>H/O financial crisis due to COVID-19</b>						
Yes	34(75.6%)	11(24.4%)	37(87.2%)	8(17.8%)	41(91.1%)	4(8.9%)
No	82(81.2%)	19(18.8%)	87(86.2%)	14(13.9%)	89(88.1%)	12(11.9%)
<b>P-Value</b>	<b>0.245</b>		<b>0.551</b>		<b>0.712</b>	
<b>Feel fear due to spread of COVID -19</b>						
Yes	85(77.2%)	25(22.7%)	93(84.6%)	17(15.5%)	98(89.1%)	12(10.9%)
No	31(86.1%)	5(13.9%)	31(86.2%)	5(13.9%)	32(88.9%)	4(11.1%)
<b>P-value</b>	<b>0.493</b>		<b>0.848</b>		<b>0.607</b>	
<b>Felt wariness about uncertainty of COVID -19 pandemic</b>						
Yes	66(75%)	22(25.0%)	74(84.1%)	14(15.9%)	74(84.1%)	14(15.9%)
No	48(85.7%)	8(14.3%)	48(93.1%)	8(14.3%)	54(96.5%)	2(3.6%)
<b>P-value</b>	<b>0.048</b>		<b>0.461</b>		<b>0.327</b>	
<b>Felt depression due to uncertainty of COVID -19 pandemic</b>						
Yes	55(79.7%)	14(20.3%)	57(82.6%)	12(17.4%)	59(85.5%)	10(14.5%)
No	61(79.2%)	16(20.8%)	67(87%)	10(13.0%)	71(92.2%)	6(7.8%)
<b>P-value</b>	<b>0.339</b>		<b>0.68</b>		<b>0.327</b>	
<b>H/O food crisis faced family due to COVID 19 pandemic</b>						
Yes	7(77.8%)	2(22.2%)	7(71.8%)	2(22.2%)	9(100.0%)	0(0.0%)
No	109(79.65%)	28(20.4%)	117(25.4%)	20(14.6%)	121(88.4%)	16(11.7%)
<b>P-value</b>	<b>0.957</b>		<b>0.78</b>		<b>0.382</b>	
<b>Relationship status among friend</b>						
Good as non-covid situation	26(92.9%)	2(7.1%)	21(75%)	7(25.05)	26(92.9%)	2(7.1%)
Bad then non covid situation	40(76.95%)	12(23.1%)	49(94.2%)	3(5.8%)	48(92.3%)	4(7.7%)

<i>Good then non covid situation</i>	6(100%)	0(0.0%)	4(66.7%)	2(33.3%)	5(83.3%)	1(16.7%)
<i>Same as non-covid situation</i>	84(73.3%)	16(26.7%)	50(83.3%)	10(16.7%)	51(85%)	9(15.0%)
<i>P-value</i>	<b>0.201</b>		<b>0.098</b>		<b>0.035</b>	

## Discussion

In our study 34% had emotional 31% had conduct and 17% had hyperactivity symptoms respectively during the COVID-19 pandemic. In a similar study found that a small proportion of children (8.0%, 65/816 in Wuhan and 11.7%, 98/839 in Shanghai) had a substantial risk of clinically significant emotional problems which is lower prevalence than our study and 39.5% of children in Wuhan and 58.4% in Shanghai had behavioral problems such as aggressive or stubborn behavior and tantrums or meltdowns during the epidemic ( $p < 0.001$ ) which is higher than our study (Du, F., He, L., Francis, M.R. *et al.* 2021) (7). This result is slightly different because in our study the sample size is smaller and our study conducted in one area whereas the other study conducted in two big cities with large sample.

Our study found that adolescents of 15 and 17 years were suffering more from both emotional and behavioral problems compared to 11 to 14 years. In Bangladesh other studies found that pediatric psychiatric disorder was significantly higher in late adolescence than in early adolescence (8). Here, the majority of the female adolescents had emotional and behavioral (hyperactivity) symptoms. Study conducted by Liu et al. (2021), Sabharwal et al., (2020), and Ravens-Sieberer et al.,(2021) during COVID 19 pandemic shows emotional symptoms is higher in girls than boys (2,3,9) and another study conducted among children and adolescents in Bangladesh prior to COVID 19 pandemic by Mallik and Radwan, (2020) found girls had more emotional disorder, and boys have more behavioral disorder, (10) which is consistent with our study.

Female adolescents, on the other hand, have suffered more from emotional and behavioral problems during the COVID-19 pandemic, owing to unequal distribution of care and domestic work, greater involvement in household chores, leaving them with no time to learn, limited educational opportunities, uncertainty about access to health services, and experiencing more family violence and abuse (11).

In this study we identified that adolescents who had wariness about uncertainty of COVID-19 pandemic, 25% had significant emotional symptoms on the other hand who had no wariness about uncertainty of COVID-19 pandemic, 14.3% had emotional symptoms. There is an association ( $p = 0.048$ ) present between emotional symptoms with 'felt restlessness due to uncertainty of the COVID-19 pandemic'. Research on adolescent mental well-being during COVID 19 in Indonesia also found that subjective perception towards anxiety due to the COVID 19 pandemic has an association towards emotional problems (12).

In Bangladesh, during COVID-19, Khan et al. (2020) conducted an online study among college and university students which showed that perceived COVID-19 symptoms were significantly associated with creating a higher score on the DASS stress subscale (13). It matches our findings. There is also an association ( $p = 0.035$ )

present between behavioral (hyperactivity) symptoms and "relationship between friends." We found a similar association in a study that was conducted by Sabharwal et al. (2020) among Indian young adults (3).

In this study we identified that among the adolescents who had a history of positive symptoms for COVID-19, 26.5% had hyperactivity symptoms, on the other hand adolescents who had no history of positive symptoms for COVID-19, and only 9.8% had significant hyperactivity symptoms. There was a highly significant association ( $p=0.004$ ) present between behavioral (hyperactivity) symptoms and having a history of positive symptoms for COVID-19. This is a new finding which can be used as a guideline of further study.

## 10. Limitations

The study was limited to six selective outpatient departments of a selected tertiary Hospital of Dhaka, which may be uniquely different with other health care setting or general adolescent population. The study was conducted using a pre-tested semi structured questionnaire. Only self-version of the scale was used for emotional and behavior presentation screening, that may effect on measuring actual mental status. Despite these limitations, our study shows that significant number of adolescents had emotional and behavioral presentation who was attending at the outpatient departments of BSMMU during COVID-19 pandemic.

## 11. Conclusion

Adolescents suffered mostly from emotional problems. Around one-third of the adolescents had emotional symptoms while 31% and 17% had conduct symptoms and hyperactivity symptoms respectively. Majority of the female adolescents had emotional and hyperactivity symptoms compared to male adolescents. Peer relationship plays a vital role in minimizing emotional and behavioral problems among adolescents. Further follow up or long-term longitudinal study on adolescents' behavior is recommended to identify the after COVID-19 mental health condition. These will help to evaluate the mental health changes among adolescents during and after COVID-19 pandemic.

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#### **Figure legends:**

Figure 1: Sex of respondents (n=146)

Figure 2: Age of the respondents (n=146)

Figure 3: Prevalence of Emotional, Conduct and Hyperactive Problem (n=146)

Figure 1: Sex of respondents

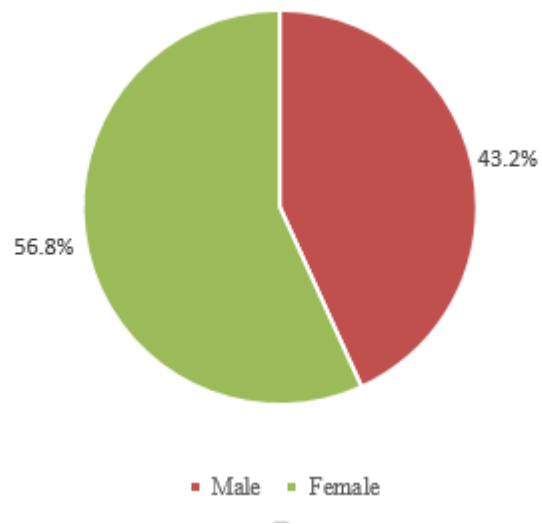
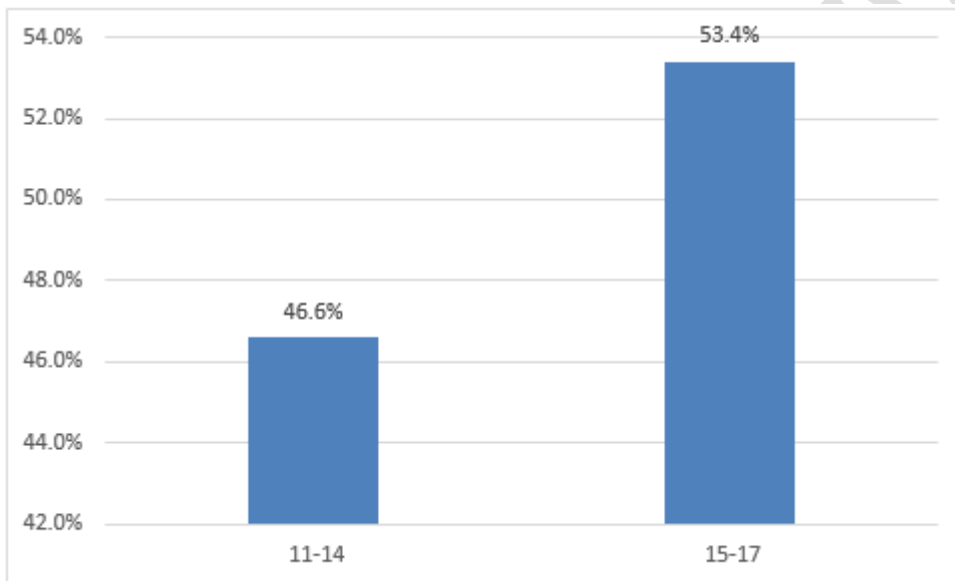


Figure 2: Age of the respondents



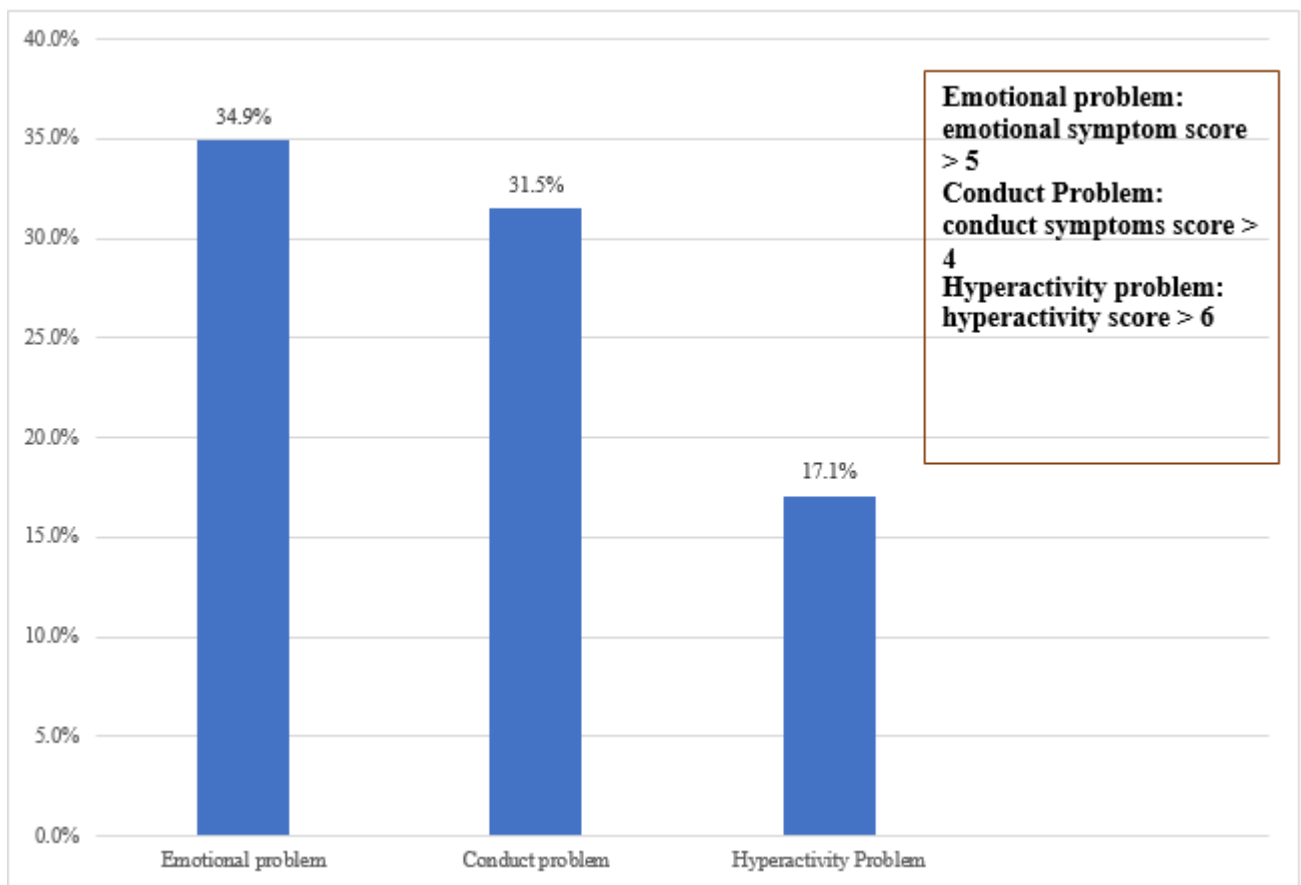


Figure 3: Prevalence of Emotional, Conduct and Hyperactive Problem