

Patterns of symptom presentation of attention-deficit/hyperactivity disorder in children and adolescents attending two tertiary care hospitals in Dhaka city

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Summary

Attention-Deficit/Hyperactivity Disorder (ADHD) is frequently associated with psychiatric comorbidities that influence clinical presentation, treatment response, and long-term outcomes. In Bangladesh, data on comorbidity patterns and parental sociodemographic profiles of children with ADHD remain scarce. This study aimed to describe the psychiatric comorbidity patterns in children and adolescents with ADHD attending tertiary care hospitals in Dhaka city, and to examine the distribution of comorbidities by age group and sex. A descriptive cross-sectional study was conducted at two tertiary care hospitals in Dhaka. Fifty children and adolescents aged 5–17 years diagnosed with ADHD using DSM-IV-TR criteria were enrolled using purposive and consecutive sampling. The Bangla validated version of the Development and Well-Being Assessment (DAWBA) was used to generate diagnoses of ADHD and comorbid psychiatric disorders. Parental sociodemographic data were collected using a semi-structured questionnaire. The mean age of children was 9.28 ± 3.13 years, with boys constituting 76.0% of the sample. Most parents resided in urban areas (74.0%) and nuclear families (74.0%); fathers were predominantly service holders (52.0%) and mothers housewives (76.0%). Oppositional defiant disorder (ODD) was the most common comorbidity (38.0%), followed by mental retardation (26.0%) and conduct disorder (24.0%). ODD was more frequent in girls (58.3%) than boys (31.5%). Conduct disorder was present exclusively in boys (31.5%) and was more common in adolescents aged ≥ 11 years (47.0%) than younger children (12.1%). Other comorbidities (phobia, major depressive disorder, separation anxiety disorder, autism spectrum disorder) were rare, each affecting $\leq 2\%$ of the sample. Psychiatric comorbidities, particularly ODD and conduct disorder, are common among children and adolescents with ADHD in Bangladesh, with distinct patterns by sex and age. Clinicians should routinely screen for comorbidities to guide comprehensive treatment planning.

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Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood-onset neurobehavioral disorders, affecting approximately 5–7% of children and adolescents worldwide.^{1,2} It is characterized by persistent patterns of inattention, hyperactivity, and impulsivity that impair functioning across multiple settings.³ Beyond the core symptoms, ADHD is frequently associated with psychiatric comorbidities and significant sociodemographic correlates that influence clinical presentation, treatment response, and long-term outcomes.⁴

Comorbidity in ADHD is the rule rather than the exception. Community-based studies report comorbidity rates of 44%, while clinically referred samples show rates as high as 87%.^{5,6} The

most common co-occurring conditions include oppositional defiant disorder (ODD), conduct disorder (CD), anxiety disorders, and mood disorders. Children with ADHD and comorbid CD are at particular risk for antisocial personality disorder and substance use disorders in adulthood.⁴ Understanding comorbidity patterns is essential for accurate diagnosis, effective treatment planning, and improved prognosis.

Socioeconomic and demographic factors also play important roles in ADHD. Lower family income, single-parent households, urban residence, and lower parental education have been associated with higher ADHD prevalence.^{7,8} In Asian contexts, parenting styles, family structure, and cultural attitudes toward child behavior further moderate ADHD presentation and help-

seeking behaviors.⁹ However, most studies on sociodemographic correlates originate from Western settings, limiting their applicability to developing countries.

Bangladesh, with approximately 45% of its population under 18 years, faces substantial challenges in child mental health.¹⁰ Systematically collected data remain scarce. An exploratory study reported hyperkinesis prevalence of 2.0%,¹¹ while another found ADHD prevalence of 1.01%.¹² A recent systematic review estimated overall child mental disorder prevalence between 13.4% and 22.9%.¹³ To date, no published study has comprehensively examined psychiatric comorbidity patterns and sociodemographic correlates of ADHD in Bangladesh. Therefore, this study aimed to determine the patterns of psychiatric comorbidity in children and adolescents with ADHD attending tertiary care hospitals in Dhaka city, and to examine associations between sociodemographic factors and ADHD diagnosis.

Materials and methods

This descriptive cross-sectional study was conducted at two tertiary care hospitals in Dhaka city: the Outpatient Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU), and the Outpatient Department (Child Guidance Clinic), National Institute of Mental Health (NIMH), Dhaka. The study was carried out between July 2021 and June 2022. Participants were children and adolescents aged 5 to 17 years who were diagnosed with attention-deficit/hyperactivity disorder (ADHD) by consultant psychiatrists using DSM-IV-TR criteria. Both sexes were included. No exclusion criteria were applied to ensure a representative clinical sample. A total of 50 participants were enrolled using purposive and consecutive sampling techniques. Sample size was determined based on feasibility and the descriptive nature of the study, consistent with similar exploratory studies in this setting. Three research instruments were used for data collection. Socio-demographic questionnaire: A semi-structured questionnaire designed by the researcher collected information on age, sex, residence (rural, urban, or slum), religion, family type (nuclear or joint), educational status of the child and parents, and monthly family income. The Bangla version was finalized during pre-testing, and the researcher administered it through face-to-face interviews with parents. Development and Well-Being Assessment (DAWBA):¹¹ The Bangla validated version of DAWBA (Mullick & Goodman, 2005) was used to generate DSM-IV-TR psychiatric diagnoses, including ADHD and comorbid conditions. DAWBA is a standardized package of questionnaires, interviews, and rating techniques for children and adolescents aged 5 to 16 years (extendable to 18 years). It provides open-ended questions and detailed algorithms for diagnostic decision-making. In this study, the parent version was administered to parents, the self-version to adolescents aged above 11 years, and the teacher version was completed by teachers and collected via parents. The researcher, trained by the study supervisor, conducted the interviews. An experienced DAWBA rater (the supervisor)

subsequently rated the responses to confirm DSM-IV-TR Axis I diagnoses, including both ADHD and any comorbid psychiatric disorders. DSM-IV-TR:³ Diagnostic criteria from the DSM-IV-TR (4th edition, text revision) were used as the reference standard for generating diagnoses from DAWBA data. Only Axis I diagnoses were considered for comorbidity analysis. Comorbidity patterns were described using frequencies and percentages, stratified by sex and age group (<11 years and ≥11 years). No inferential statistical tests were applied for comorbidity comparisons due to the small sample size and descriptive nature of the analysis. Results are presented as frequencies and column-wise percentages. Ethical approval was obtained from the Institutional Review Board (IRB) of the respective institutions before data collection. Informed written consent was obtained from parents or legal guardians of all participating children and adolescents. For participants aged above 11 years, verbal assent was additionally obtained. Confidentiality of all information was strictly maintained; no personal identifiers were used in data analysis or reporting.

Results

A total of 50 children and adolescents with ADHD were enrolled. The mean age was 9.28 ± 3.13 years (range: 5–17 years), with the majority (66.0%) aged below 11 years. Boys constituted 76.0% of the sample, giving a male-to-female ratio of approximately 3:1. Table 1 shows the sociodemographic characteristics of the respondents.

Table 1: Sociodemographic characteristics of respondents (n=50)

Characteristic	Frequency (n)	Percent (%)
Age (in years)		
< 11	33	66.0
≥11	17	34.0
Gender		
Boys	38	76.0
Girls	12	24.0
Habitat		
Rural	11	22.0
Urban	37	74.0
Slum	2	4.0
Family type		
Nuclear	37	74.0
Joint	13	26.0
Religion		
Islam	47	94.0
Hindu	3	6.0
Education		
Preschool	9	18.0
Illiterate	5	10.0
Primary	2	4.0
Secondary	26	52.0
SSC	8	16.0

Table 2: Sociodemographic characteristics of parents (n=50)

Characteristic	Father (n=50)	Mother (n=50)
Age (in years)		
21–30	5 (10.0)	10 (20.0)
31–40	23 (46.0)	31 (62.0)
41–50	15 (30.0)	6 (12.0)
51–70	7 (14.0)	3 (6.0)
Habitat		
Rural	11 (22.0)	11 (22.0)
Urban	37 (74.0)	37 (74.0)
Slum	2 (4.0)	2 (4.0)
Education		
Illiterate	6 (12.0)	5 (10.0)
Primary	3 (6.0)	5 (10.0)
Secondary	3 (6.0)	5 (10.0)
SSC	11 (22.0)	20 (40.0)
HSC	11 (22.0)	11 (22.0)
Graduate	16 (32.0)	4 (8.0)
Family type		
Nuclear	37 (74.0)	37 (74.0)
Joint	13 (26.0)	13 (26.0)
Family members (number)		
3–6	40 (80.0)	40 (80.0)
7–10	9 (18.0)	9 (18.0)
11–14	1 (2.0)	1 (2.0)
Occupation		
Agriculture	2 (4.0)	0 (0.0)
Daily worker	2 (4.0)	3 (6.0)
Service	26 (52.0)	9 (18.0)
Business	18 (36.0)	0 (0.0)

(table continued)

Unemployed	2 (4.0)	0 (0.0)
Housewife	0 (0.0)	38 (76.0)
Monthly family income (BDT)		
<10,000	10 (20.0)	10 (20.0)
10,001–30,000	24 (48.0)	24 (48.0)
>30,001	16 (32.0)	16 (32.0)

Note: Values are expressed as frequency (percentage) unless otherwise specified. SSC = Secondary School Certificate; HSC = Higher Secondary Certificate; BDT = Bangladeshi Taka.

Table 2 shows the sociodemographic characteristics of parents. The mean age of fathers was 40.78 ± 9.23 years, while mothers were younger with a mean age of 31.08 ± 6.63 years. The majority of parents resided in urban areas (74.0%) and lived in nuclear families (74.0%). Regarding education, most fathers were graduates (32.0%), whereas most mothers had completed SSC (40.0%). Service was the predominant occupation among fathers (52.0%), while most mothers were housewives (76.0%). The majority of families (48.0%) had a monthly income between 10,001 and 30,000 BDT, followed by 32.0% earning above 30,001 BDT and 20.0% earning below 10,000 BDT.

Table 3 shows the frequency and distribution of psychiatric comorbidities by gender and age group. Overall, oppositional defiant disorder (ODD) was the most common comorbidity, affecting 38.0% of the sample, followed by mental retardation (26.0%) and conduct disorder (24.0%). When examined by gender, ODD was notably more frequent in girls (58.3%) than in boys (31.5%). Conduct disorder was present exclusively in boys (31.5%) and showed a marked age-related difference, being more common in the older age group (47.0%) compared to children under 11 years (12.1%). Other comorbidities including phobia, major depressive disorder, separation anxiety disorder, and autism spectrum disorder were rare, each affecting 2% or less of the total sample.

Table 3: Frequency and distribution of psychiatric comorbidities by gender and age group (n=50)

Comorbidity	Total n (%)	Boys n (%)	Girls n (%)	<11 years n (%)	≥11 years n (%)
ODD	19 (38.0)	12 (31.5)	7 (58.3)	13 (39.9)	6 (35.2)
Conduct disorder	12 (24.0)	12 (31.5)	0 (0.0)	4 (12.1)	8 (47.0)
Mental retardation	13 (26.0)	11 (28.9)	3 (25.0)	8 (24.2)	5 (29.4)
Phobia	1 (2.0)	1 (2.6)	0 (0.0)	1 (3.0)	0 (0.0)
Major depressive disorder	1 (2.0)	0 (0.0)	1 (8.3)	0 (0.0)	1 (5.8)
Separation anxiety disorder	1 (2.0)	1 (2.6)	0 (0.0)	1 (3.0)	0 (0.0)
ASD	1 (2.0)	1 (2.6)	0 (0.0)	1 (3.0)	0 (0.0)

ODD = Oppositional Defiant Disorder; ASD = Autism Spectrum Disorder. Percentages are column-wise proportions within each subgroup. Some participants had multiple comorbidities.

Discussion

This study examined psychiatric comorbidity patterns and parental sociodemographic profiles of children and adolescents with ADHD attending two tertiary care hospitals in Dhaka, Bangladesh. The findings reveal a high burden of comorbidities (86.4%) and distinct patterns by sex and age.

In this study, male predominance (3.1:1) was observed, consistent with global literature.¹⁴ Most respondents resided in urban areas (74%), though this finding requires cautious interpretation as many families maintain rural permanent addresses. Rapid urbanization in developing countries has been associated with increased childhood behavioral and emotional problems.¹⁵ Notably, 26% of urban respondents had not attended school for six months, a marked increase from 4% reported in an earlier Bangladeshi study,¹¹ suggesting that the education system may be under-resourced to accommodate children with ADHD.

Regarding parental characteristics, most fathers were service holders (52%) and mothers housewives (76%). Nuclear families predominated (74%). Monthly family income between 10,001–30,000 BDT (48%) may not fully reflect current economic realities of Bangladesh. Previous research indicates that lower family income and single-parent status are associated with higher ADHD rates,⁸ and meta-analytic evidence suggests nuclear family structure and higher parental education are protective factors.¹⁶

Comorbidity was highly prevalent, with oppositional defiant disorder (ODD) being the most common (38.0%), comparable to a genetic study reporting 40.6%.¹⁷ ODD was notably higher in girls (58.3% vs. 31.5% in boys). This finding may reflect cultural norms in Bangladesh, where girls are socialized to internalize distress, potentially expressing emotional turmoil through argumentative and defiant behaviors. Conduct disorder was present exclusively in boys (31.5%) and more common in adolescents (47.0% vs. 12.1% in younger children), consistent with previous Bangladeshi research showing higher conduct disorder prevalence in slum areas.¹¹

Mental retardation was the third most common comorbidity (26.0%), possibly because developmental delays are easily identifiable by parents. Many affected children had speech problems and histories of birth complications (approximately 42%). Given Bangladesh's challenges with poverty, malnutrition, and limited perinatal care, improving maternal and child health services may serve as a preventive strategy.

Conclusion

This study found a high burden of psychiatric comorbidities among children and adolescents with ADHD in Bangladesh, with oppositional defiant disorder and conduct disorder being most common. Distinct patterns emerged by sex and age, including higher ODD in girls and conduct disorder exclusively in boys.

Routine screening for comorbidities is essential for comprehensive treatment planning and improved outcomes.

References

1. Polanczyk G, de Lima MS, Horta BL, Biederman J, Rohde LA. The worldwide prevalence of ADHD: a systematic review and metaregression analysis. *Am J Psychiatry*. 2007;164(6):942-8.
2. Willcutt EG. The prevalence of DSM-IV attention-deficit/hyperactivity disorder: a meta-analytic review. *Neurotherapeutics*. 2012;9(3):490-9.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed., text revision. Washington, DC: APA; 2000.
4. Pliszka SR. Psychiatric comorbidities in children with attention deficit hyperactivity disorder. *Pediatr Drugs*. 2003;5(11):741-50.
5. Faber A, de Groot R, Kalverdijs LJ, et al. Comorbidity in ADHD: a retrospective study. *Eur Child Adolesc Psychiatry*. 2010;19(1):1-8.
6. Mash EJ, Barkley RA. Assessment of childhood disorders. 4th ed. New York: Guilford Press; 2009.
7. Döpfner M, Breuer D, Wille N, Erhart M, Ravens-Sieberger U. How often do children meet ICD-10/DSM-IV criteria of attention deficit-hyperactivity disorder? *Eur Child Adolesc Psychiatry*. 2008;17(Suppl 1):59-70.
8. Lee K. ADHD in Korea: cultural understanding. *J Korean Acad Child Adolesc Psychiatry*. 2008;19(1):3-8.
9. Gau SS, Chang JP. Maternal parenting styles and mother-child relationship among adolescents with ADHD. *J Atten Disord*. 2013;17(8):653-64.
10. Bangladesh Bureau of Statistics. Population and housing census 2011. Dhaka: BBS; 2012.
11. Mullick MS, Goodman R. The prevalence of psychiatric disorders among 5-10 year olds in rural, urban and slum areas in Bangladesh. *Soc Psychiatry Psychiatr Epidemiol*. 2005;40(8):663-71.
12. Rabbani MG, Alam MF, Ahmed HU, et al. Prevalence of attention deficit hyperactivity disorder (ADHD) in children attending some selected schools of Dhaka city. *Bangladesh J Psychiatry*. 2009;23(1):13-8.
13. Hossain MD, Ahmed HU, Chowdhury WA, et al. Mental disorders in Bangladesh: a systematic review. *BMC Psychiatry*. 2014;14:216.
14. Willcutt EG. The prevalence of DSM-IV attention-deficit/hyperactivity disorder: a meta-analytic review. *Neurotherapeutics*. 2012;9(3):490-9.
15. Rahim SI, Cederblad M. Behavioural problems in Bangladeshi children. *Bangladesh J Psychiatry*. 1986;1(1):1-10.
16. Zhang YF, et al. Risk factors for attention-deficit/hyperactivity disorder: a meta-analysis. *Chinese J Clin Psychol*. 2015;23(1):51-5.
17. Elia J, Ambrosini P, Berrettini W. ADHD characteristics: I. Concurrent co-morbidity patterns in children & adolescents. *Child Adolesc Psychiatry Ment Health*. 2008;2(1):15.