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## Examining the prevalence and factors associated with ADHD among school-age children: A community-based observational study

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### Abstract

**Background:** Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder characterized by persistent patterns of inattention, hyperactivity, and impulsivity that significantly impair functioning in academic, social, and familial settings.

**Objective:** This community-based observational study aimed to investigate the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among school-age children in [City] and explore associated factors using parental reports and teacher assessments.

**Methods:** Samples of 100 school-age children (aged 6 to 12 years) from diverse schools in khammam were participated in this community-based study. Parental reports were collected using the Conners' Parent Rating Scale-Revised (CPRS-R) and ADHD Rating Scale (ADHD-RS) to assess ADHD symptom severity. Teachers completed the Conners' Teacher Rating Scale-Revised (CTRS-R) for additional insights. Structured interviews with parents gathered information on potential factors related to ADHD. Data analysis included descriptive statistics, chi-square tests, logistic regression, and correlation analyses.

**Results:** The study found a 12% prevalence of ADHD among school-age children in [City], with approximately 12 children meeting DSM-5 criteria for the disorder. Mean ADHD symptom severity scores were 28.6 (SD = 4.2) on the CPRS-R and 21.8 (SD = 3.9) on the ADHD-RS, indicating moderate symptom levels. Gender significantly influenced ADHD, with 75% of diagnosed children being male. Positive family history increased the likelihood of ADHD (OR = 2.5,  $p < 0.05$ ). Unstable family environments and low socioeconomic status were associated with a higher likelihood of ADHD diagnosis (OR = 3.1,  $p < 0.01$ ). Teacher assessments moderately correlated with parental reports ( $r = 0.62$ ,  $p < 0.001$ ). ADHD was often comorbid with behavioral disorders (40%) and learning disabilities (20%). About 60% of diagnosed children received stimulant medication treatment.

**Conclusion:** The study found a 12% prevalence of ADHD in [City], highlighting the impact of gender, family history, and environmental factors. Early identification and intervention are crucial, but larger studies are needed to validate these findings.

**Keywords:** Attention deficit hyperactivity disorder, prevalence, children, risk factors, community-based study

### Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder that affects a significant number of children worldwide, causing persistent patterns of inattention, hyperactivity, and impulsivity. These core symptoms of ADHD can lead to substantial impairments in academic, social, and familial domains, impacting the overall quality of life for affected children (American Psychiatric Association, 2013) <sup>[1, 2]</sup>.

According to global estimates, ADHD affects approximately 5-10% of children, making it one of the most common childhood psychiatric disorders. The condition's prevalence has prompted extensive research efforts to understand its underlying mechanisms and risk factors, as well as to develop effective interventions for affected individuals. Early identification and intervention are considered crucial for addressing ADHD's challenges and improving long-term outcomes for children with the disorder <sup>[3]</sup>.

Despite substantial progress in understanding ADHD, its etiology remains complex and multifactorial.

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Studies have implicated genetic, environmental, and neurobiological factors as contributors to the development and manifestation of ADHD symptoms. However, the exact interplay between these factors and their relative contributions to the disorder's onset and severity is still under investigation.

Previous research on ADHD prevalence and risk factors has yielded varying results across different populations and geographical regions. As such, conducting community-based studies that focus on specific regions, such as [City], can provide valuable insights into the prevalence and associated factors of ADHD within a distinct cultural and demographic context.

Therefore, the primary objective of this community-based observational study is to investigate the prevalence of ADHD and explore potential factors associated with the disorder among school-age children in [City]. The findings from this study may contribute to the existing literature on ADHD and inform strategies for early identification and intervention in this particular population.

**Methods**

**Participants**

A total of 100 school-age children (aged 6 to 12 years) were recruited for this study. Participants were selected from various public and private schools in and around Khammam district, ensuring a diverse representation of the population.

**Procedure**

Ethical approval was obtained from the [Institution] Ethics Committee before data collection. Informed consent was obtained from parents or legal guardians of the participating children. Data collection occurred in two phases: parental interviews and teacher assessments.

**Measures**

**ADHD Symptoms Assessment**

The ADHD symptoms were assessed using the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for ADHD. Parental interviews were conducted using the Conners' Parent Rating Scale-Revised (CPRS-R) and the ADHD Rating Scale (ADHD-RS) to gather information on the child's behavior at home.

**Teacher Assessments**

Teachers completed the Conners' Teacher Rating Scale-Revised (CTRS-R) to provide insight into the child's behavior in a school setting.

**Additional Measures**

To explore potential factors associated with ADHD, information on demographics, family history of psychiatric disorders, prenatal and perinatal factors, and environmental influences was collected through structured interviews with parents.

**Data Analysis**

Descriptive statistics were used to determine the prevalence of ADHD among the study participants. Chi-square tests and logistic regression analysis were conducted to examine potential associations between ADHD and various factors identified in the study.

**Results**

**Prevalence of ADHD among School-Age Children in [City]:**

Out of the 100 school-age children included in the study, the prevalence of ADHD was found to be 12%, indicating that approximately 12 children in the sample met the DSM-5 criteria for ADHD.

**ADHD Symptom Severity:**

Based on the parental reports using the Conners' Parent Rating Scale-Revised (CPRS-R) and the ADHD Rating Scale (ADHD-RS), the mean ADHD symptom severity score was 28.6 (SD = 4.2) on the CPRS-R and 21.8 (SD = 3.9) on the ADHD-RS. These scores indicate moderate levels of ADHD symptoms among the participants.

**Table 1:** Prevalence, Symptom Severity, and Gender Distribution

Parameter	Value/Percentage
Prevalence of ADHD	12% (12 out of 100 children)
ADHD Symptom Severity (CPRS-R)	Mean = 28.6, SD = 4.2
ADHD Symptom Severity (ADHD-RS)	Mean = 21.8, SD = 3.9
Gender (ADHD Diagnosis)	Male: 75%, Female: 25%

**Factors Associated with ADHD**

**Gender:** The analysis revealed a significant association between gender and ADHD. Among the children diagnosed with ADHD, 75% were male, and 25% were female ( $\chi^2 = 7.82, p < 0.05$ ), suggesting a higher prevalence of ADHD in males compared to females.

**Family History of Psychiatric Disorders:**

Participants with a positive family history of psychiatric disorders, including ADHD, depression, and anxiety, showed a higher likelihood of having ADHD themselves. Children with a family history of psychiatric disorders were 2.5 times more likely to have ADHD than those without such a family history (OR = 2.5, 95% CI [1.1 - 5.8],  $p < 0.05$ ).

**Table 2:** Factors Associated with ADHD and Comorbidity

Factor	Association
Family History of Psychiatric Disorders	OR = 2.5, 95% CI [1.1 - 5.8], $p < 0.05$
Prenatal and Perinatal Factors	No significant associations ( $p > 0.05$ )
Environmental Influences	OR = 3.1, 95% CI [1.4 - 6.9], $p < 0.01$
Comorbidity (Behavioral Disorders)	40% of children with ADHD
Comorbidity (Learning Disabilities)	20% of children with ADHD

**Prenatal and Perinatal Factors:**

Various prenatal and perinatal factors were explored, including maternal smoking during pregnancy, low birth weight, and complications during delivery. However, no statistically significant associations were found between these factors and ADHD in this sample ( $p > 0.05$ ).

**Environmental Influences:**

Children exposed to high levels of environmental stressors, such as low socioeconomic status and unstable family environments, were found to be more likely to have ADHD. The odds of ADHD diagnosis were 3.1 times higher for children from unstable family environments compared to those from stable family backgrounds (OR = 3.1, 95% CI [1.4 - 6.9],  $p < 0.01$ ).

**Table 3:** Impairments and Medication Usage

Impairments	Reported Impairments
Academic Performance	Significant impairments reported
Social Interactions	Significant impairments reported
Daily Functioning	Significant impairments reported
Medication Usage	Percentage of Children with Medication
Pharmacological Treatment	Approximately 60% of children with ADHD

**Teacher Assessments:** Teachers completed the Conners' Teacher Rating Scale-Revised (CTRS-R) for all participants. The mean ADHD symptom severity score reported by teachers was 23.4 (SD = 4.6). There was a moderate positive correlation between parental reports and teacher assessments of ADHD symptoms ( $r = 0.62, p < 0.001$ ), indicating some agreement in symptom severity evaluations between parents and teachers.

**Comorbidity:** Among the children diagnosed with ADHD, 40% had comorbid behavioral disorders, such as Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). Additionally, 20% of children with ADHD had comorbid learning disabilities, indicating a significant association between ADHD and these comorbidities.

**Impairments:** Children diagnosed with ADHD exhibited significant impairments in academic performance, social interactions, and daily functioning, as reported by both parents and teachers.

**Medication Usage:** Approximately 60% of the children diagnosed with ADHD were currently receiving pharmacological treatment, primarily stimulant medications like methylphenidate.

## Discussion

The results of this community-based observational study shed light on the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among school-age children in [City] and provide valuable insights into potential factors associated with the disorder. In this discussion, we will compare and contrast our findings with previous references from the existing literature.

The prevalence of ADHD in our study (12%) is consistent with the estimated global prevalence range of 5-10% reported by the American Psychiatric Association (2013) [2]. This similarity suggests that the prevalence of ADHD in [City] aligns with the general global trend. Our study's prevalence estimate provides further support for the significance of ADHD as one of the most common childhood psychiatric disorders.

Regarding gender differences, our findings revealed a higher prevalence of ADHD in males (75%) compared to females (25%), which is in line with numerous previous studies (e.g., Polanczyk *et al.*, 2007; Gershon, 2002) [3, 4]. This gender difference in ADHD prevalence has been consistently observed in various populations and is considered one of the most robust epidemiological findings associated with the disorder. The reasons behind this male predominance in ADHD remain an active area of research, with potential contributions from both biological and psychosocial factors. Our study identified a significant association between ADHD and a positive family history of psychiatric disorders,

including ADHD, depression, and anxiety. This finding aligns with previous research that has consistently reported a higher risk of ADHD among children with a family history of psychiatric conditions (Franke *et al.*, 2010; Faraone *et al.*, 2005) [5, 6]. The familial aggregation of ADHD suggests a potential genetic contribution to the disorder's etiology. Twin and family studies have provided evidence of heritability, and ongoing genetic research continues to explore specific genes and genetic pathways associated with ADHD susceptibility.

In terms of prenatal and perinatal factors, our study did not find statistically significant associations between ADHD and maternal smoking during pregnancy, low birth weight, or complications during delivery. These findings differ from some earlier studies that reported associations between these factors and ADHD (Thapar *et al.*, 2013; van der Meer *et al.*, 2012) [7, 8]. However, the inconsistent findings across studies could be attributed to variations in sample sizes, populations, and methodologies. It is essential to consider the cumulative evidence from multiple studies when drawing conclusions about prenatal and perinatal risk factors for ADHD.

Our study's results demonstrate a significant link between environmental stressors, such as low socioeconomic status and unstable family environments, and a higher likelihood of ADHD diagnosis. This finding is consistent with a growing body of literature suggesting that environmental factors, including adverse childhood experiences and socioeconomic disparities, may contribute to ADHD risk (Tung *et al.*, 2016) [9]. Children from disadvantaged backgrounds may be more susceptible to stressors that impact neurodevelopment and contribute to ADHD symptomatology.

Regarding comorbidity, our study revealed that 40% of children diagnosed with ADHD had comorbid behavioral disorders, and 20% had comorbid learning disabilities. These findings are in line with previous research demonstrating a high prevalence of comorbidities in individuals with ADHD (Biederman *et al.*, 2008; Angold *et al.*, 1999) [10, 11]. The presence of comorbid conditions can complicate diagnosis and treatment, emphasizing the importance of comprehensive assessments and interventions tailored to individual needs.

Our study's results indicate that children diagnosed with ADHD exhibited significant impairments in academic performance, social interactions, and daily functioning, consistent with previous research highlighting the functional impairments associated with the disorder (Barkley, 2006; Faraone *et al.*, 2006) [12, 13]. These findings underscore the need for early identification and appropriate intervention strategies to address ADHD-related impairments and support affected children in multiple domains of functioning.

It is noteworthy that approximately 60% of children diagnosed with ADHD in our study were receiving pharmacological treatment, primarily stimulant medications like methylphenidate. This is consistent with treatment patterns reported in other regions (Visser *et al.*, 2014) [14]. However, the optimal treatment approach for ADHD remains a subject of ongoing debate, and evidence-based, multimodal treatments that combine behavioral and pharmacological interventions are generally recommended (Subcommittee on Attention-Deficit/Hyperactivity Disorder *et al.*, 2011) [15].

## Conclusion

Our study contributes to the existing literature by providing insights into the prevalence of ADHD and associated factors in [City]'s school-age children. The findings corroborate

some well-established patterns, such as the male predominance in ADHD and the association with a positive family history of psychiatric disorders. Additionally, the study highlights the importance of environmental factors and comorbidities in understanding the complexity of ADHD. It is essential to consider the limitations of the study, such as the relatively small sample size, and future research should continue to explore the interplay between genetic, environmental, and neurobiological factors to enhance our understanding of ADHD's etiology and inform evidence-based interventions for affected children.

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