

PREVALENCE OF ATTENTION DEFICIT HYPERACTIVITY DISORDER AMONG PRIMARY SCHOOL CHILDREN IN DEHRADUN, UTTARAKHAND, INDIA

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Abstract

Background: The neurodevelopment disorder known as Attention Deficit Hyperactivity Disorder (ADHD) is typified by impulsivity, hyperactivity, and inattention. It affects the day to day working of an individual. Despite being a well-known illness, its incidence in India is still unknown. The aim of this study is (1) to determine the overall prevalence of ADHD among primary school children in Dehradun. (2) To assess the gender difference in the prevalence of ADHD among children. (3) To assess the ADHD prevalence among the children of semi government and private schools in reference to Dehradun.

Methods: It is a cross sectional study, conducted on 407 children (aged 5-12 years), from various semi government and private schools located in Sahaspur Block in Dehradun, Uttarakhand. The research was conducted after taking consent from the parents. The data was collected using the ADHD DSM-5 Checklist. The data was analyzed using Excel sheet and SPSS software.

Results: Out of 407, 58 students (14.25%) were diagnosed with ADHD, 85 children (20.88%) scored 6 or more items on the inattentive scale, while 53 children (13.02%) scored 6 or more items on the hyperactive/impulsive scale. Prevalence of ADHD in boys (16.67%) were found to be more than the girls (10.06%). Inattentive symptoms were more frequent in boys (23.64%) than in girls (16.10%). Hyperactivity/Impulsivity were also higher in boys (13.95%) than girls (11.40%). While the prevalence of ADHD in children from semi-government school (46.80%) was marked higher than the prevalence of ADHD in children from private schools (14.25%). Inattentive type was found to be 59.57% in semi-government schools, while it was 15.83% in private schools. Hyperactivity/Impulsivity (36.02%) was higher in semi-government schools than the private schools (10.00%).

Conclusion: Children with ADHD often struggle with inattention, poor concentration, forgetfulness, disorganized behavior, and frequently misplacing things in their daily lives. Identifying the condition early can make a significant difference in helping them manage these challenges more effectively. This study also highlights the importance of raising awareness about ADHD among teachers and parents, as their understanding is crucial for timely and appropriate intervention.

INTRODUCTION

Attention-Deficit Hyperactivity Disorder (ADHD) is a neurological disorder that affects a child's ability to function. (Diagnostic and Statistical Manual of Mental Disorders V (DSM-5) . The major symptoms of this disorder include inattentiveness, hyperactivity and impulsivity. Although earlier there were two different diagnoses of Attention-Deficit Disorder and Attention Deficit Hyperactivity Disorder, now DSM IV has combined both the disorders into one disorder with the subtypes namely: predominantly inattentive, predominantly hyperactive and combined type.

The onset of symptoms of ADHD takes place at a very early stage (before 12 years of age, which last for about six months, affects the daily functioning of the individual and is present in more than one setting such as school, home, etc.) which includes lack of attention, disorganized behaviour, lack of concentration, being forgetful in daily activities, difficulty in completing any task and losing things. A child with ADHD faces difficulty in social interactions, increases the risky behaviour and has difficulty in achieving in school. It can also lead to frustrations among the child leading to an impulsive behaviour and hence they are often labeled as "troublemakers". It is also seen as an executive functioning impairment, primarily involving frontal lobe activity. As a result, individuals with ADHD exhibit impairments in decision-making, emotional control, and attention and focus (Magnus, W., et.al. (2023)).

Its chronic nature will have a major detrimental effect on the person's general functioning and development if the diagnosis is overlooked or postponed (Cabral, M.DL, et.al. (2020)). ADHD is less diagnosed in girls than boys during the childhood (Martin, J. (2024)). The prevalence of ADHD is 4-7% with major contributors being parental psychopathology (An, S.U., et.al. 2013).

In order to prevent the symptoms from continuing into adulthood and leading to additional comorbid illnesses, it is crucial

to recognize this problem early (Cabral, M.DL, et.al. (2020)). Thus the aim of this study is:

- To determine the overall prevalence of ADHD among primary school children in Dehradun.
- To assess the gender difference in the prevalence of ADHD among children.
- To assess the ADHD prevalence among the children of semi government and private schools in reference to Dehradun.

MATERIAL USED

- (a) Socio-demographic sheet: A sheet which was used to collect information about the child's social and demographic variables such as age, gender, type of family, parent's socio-economic status, history of any past psychiatric record, etc.
- (b) DSM 5 ADHD Symptom Checklist: A scale which was used by the parent's to report their observations about their child, in order to confirm the likelihood of ADHD.

METHODOLOGY

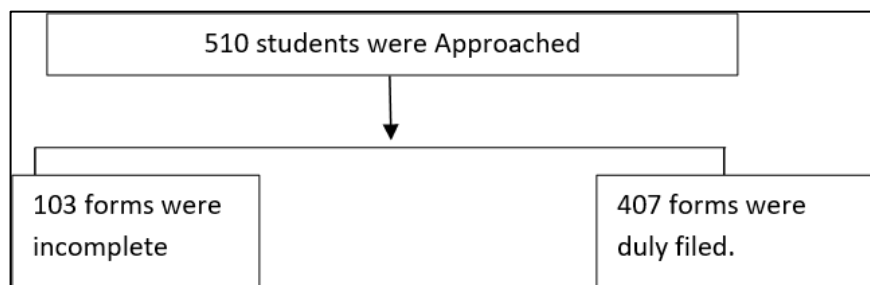
Approval from Institutional Ethics Committee (SGRR- Ref No. SGRR/IEC/01/24) was obtained before conducting the study. This cross-sectional analytical study was conducted on 407 children aged 5 to 12 years, from semi-government and private schools of Sahaspur Block in Dehradun district, Uttarakhand.

Schools were randomly selected using a lottery system, with inclusion limited to those offering classes from primary through upper primary and secondary levels. To begin with, schools across Dehradun city were approached for participation in the study. Meetings were held with school principals, during which the objectives and process of the research were clearly explained. Only those schools that provided written permission were included in the study.

All children aged between 5 and 12 years were considered eligible. Each student was given a consent form to take home and have signed by a parent or guardian. Parents were also asked to indicate their preferred language (Hindi or English) for the assessment forms.

Once the signed consent forms were returned, both parents and teachers were asked to complete questionnaires covering the child's behaviour and academic performance. Teachers received a short orientation from the investigator to help them understand how to fill in the forms, and any questions they had were addressed on the spot. Students were also given the investigator's contact number so that parents could call with any doubts about the questionnaire.

Forms with more than 20% of responses left blank were not considered for analysis. Out of the total 510 students approached, 103 forms were incomplete and therefore excluded. In the end, data from 407 students were included for analysis.



The data were analyzed under three major categories:

- Combined Type ADHD Scale
- Gender-wise (Boys vs. Girls students)
- School-wise (Semi-Govt. vs. Private schools)

STATISTICAL ANALYSIS:

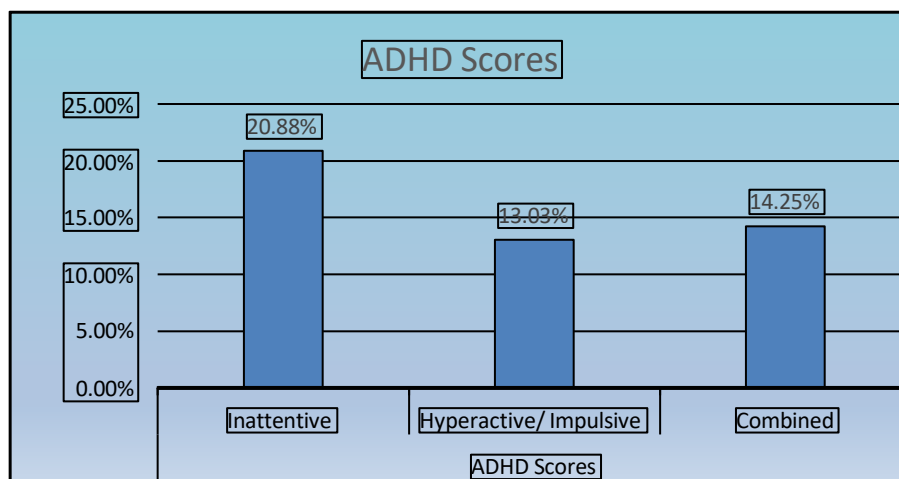
Statistical analysis was carried out physically as well as with statistical software SPSS 23 version and Microsoft word, Excel has been used to generate graphs table etc. Various statistical measures namely mean and standard deviation were utilized for all the scores of participants included in the study.

RESULT

Combined Result of ADHD

A total of **407 primary school children** who met the inclusion and exclusion criteria were analyzed

- **ADHD Combined Type** : Out of 407, **58 students (14.25%)** were diagnosed with ADHD based on DSM V-ADHD checklist), giving a **prevalence of** in this population.
- **ADHD Inattentive type**: Among the 407 students, **85 children (20.88%)** scored 6 or more items on the inattentive scale
- **ADHD Hyperactive/Impulsive type**: **53 children (13.02%)** scored 6 or more items on the hyperactive/impulsive scale.



Bar graph representing individuals with various subtypes namely:-

- **Inattentive:** The overall percentage of individuals with inattentive ADHD symptoms (6 or more items) was 21%, making it the most common type observed.
- **Hyperactive/Impulsive:** Around 13% of individuals showed hyperactive/impulsive symptoms (6 or more items), which is less prevalent compared to inattentive symptoms.
- **Combined/Total:** Nearly 14% of individuals scored in combined result, indicating the combined type of ADHD.

On the basis of Gender

	Inattentive (6 or more items)	Hyperactive/ Impulsive (6 or more items)	Combined Type ADHD Score
Boys	61	36	43
Girls	24	17	15

❖ Boys was found to be 258 out of 407 i.e 63.39 %.

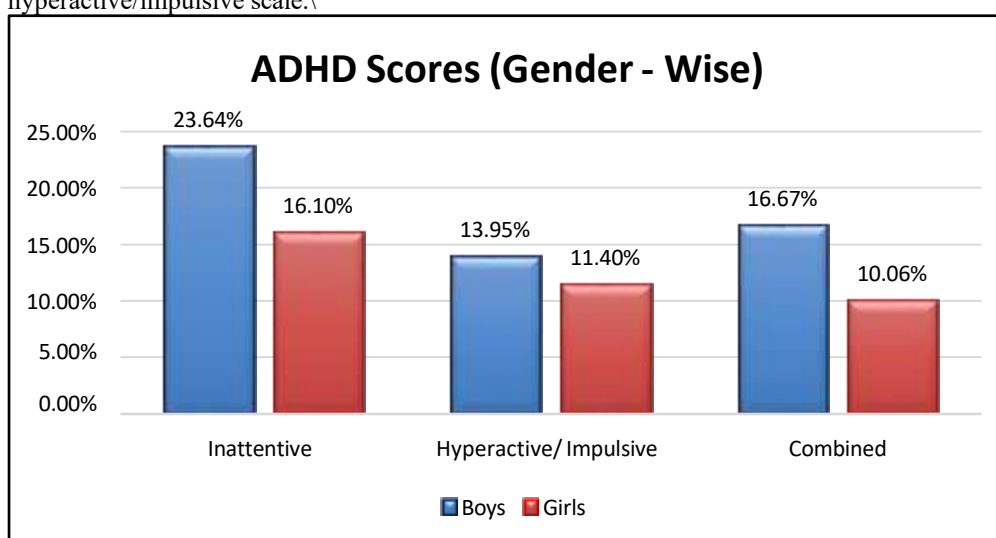
Out of 258 primary school boys, 43 students were diagnosed with ADHD based on DSM V-ADHD checklist (agreement between teachers and parents). This indicates a **prevalence of 16.67%** among boys.

- **ADHD Combined Type :** 43 boys (16.67%) scores 12 or more items in Inattentive and hyperactive scale.
- **ADHD Inattentive type:** 61 boys (23.64%) scored 6 or more items on the inattentive scale
- **ADHD Hyperactive/Impulsive type:** 36 boys (13.95%) scored 6 or more items on the hyperactive/impulsive scale.

❖ Female children was found to be 149 out of 407 i.e 36.61%

Out of 149 primary school girls, 15 students were diagnosed with ADHD based on DSM V-ADHD checklist (agreement between teachers and parents). This corresponds to a **prevalence of 10.06%** among girls.

- **ADHD Combined Type:** 15 girls (10.06%) scored 12 or more items in Inattentive and hyperactive scale.
- **ADHD Inattentive type:** 24 girls (16.10%) scored 6 or more items on the inattentive scale.
- **ADHD Hyperactive/Impulsive type:** 17 girls (11.40%) scored 6 or more items on the hyperactive/impulsive scale.



This Bar Chart give the following results :-

- **Inattentive (6 or more items):** Boys (23.64%) showed a higher percentage compared to Girls (16.10%).
- **Hyperactive/Impulsive (6 or more items):** Boys (13.95%) again scored higher than Girls (11.40%).
- **Combined (12 or more items):** A greater percentage of Boys (16.67%) met the combined criteria compared to Girls (10.06%).

On the basis of school wise ,

	Inattentive	Hyperactive/ Impulsive	Combined
Private	57	36	36
Semi-Govt	28	17	22

Semi Government was found to be 47 out of 407 i.e 11.54 %.

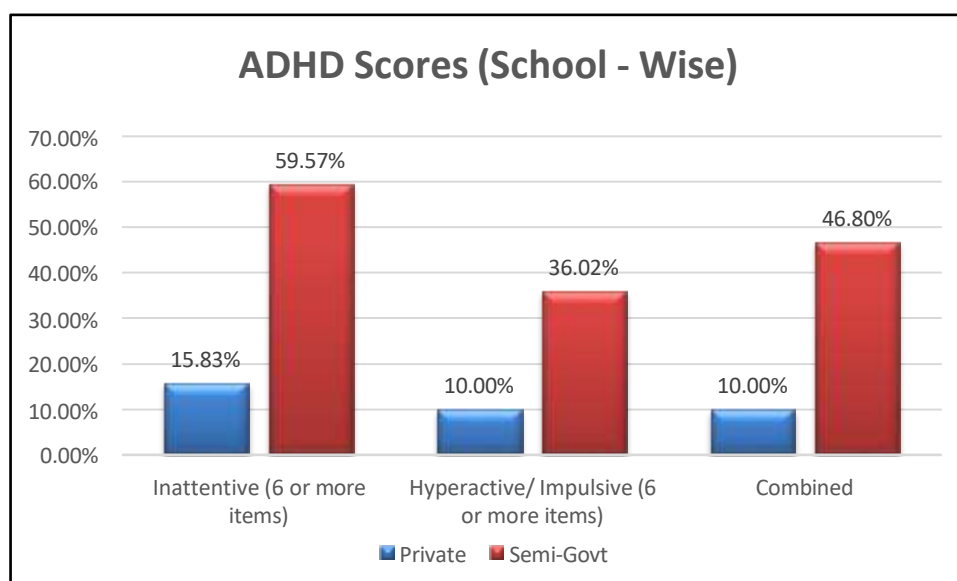
Out of 47 semi-government school children, 22 students were diagnosed with ADHD based on DSM V-ADHD checklist (agreement between teachers and parents). This corresponds to a **prevalence of 46.80%**, which is markedly higher than the overall prevalence (14.25%).

- **ADHD Combined Type:** 22 Children (46.80%) scored 12 or more items in Inattentive and Hyperactive scale.
- **ADHD Inattentive type:** 28 children (59.57%) scored 6 or more items on the inattentive scale
- **ADHD Hyperactive/Impulsive type:** 17 children (36.17%) scored 6 or more items on the hyperactive/impulsive scale

Private School was found to be 360 out of 407 i.e 88.45 %.

Out of 360 private school children, 36 students were diagnosed with ADHD based on DSM V-ADHD checklist (agreement between teachers and parents). This corresponds to a **prevalence of 10.00%**, which is lower than both the overall prevalence (14.25%) and the semi-government school prevalence (46.80%).

- **ADHD Combined Type:** 36 (10.00%) scored 12 or more items in Inattentive and Hyperactive scale.
- **ADHD Inattentive type:** 57 children (15.83%) scored 6 or more items on the inattentive scale
- **ADHD Hyperactive/Impulsive type:** 36 children (10.00%) scored 6 or more items on the hyperactive/impulsive scale.



This Bar Chart give the following results :-

- **Inattentive (6 or more items):** Semi-Govt. schools (59.57%) showed a higher percentage compared to Private schools (15.83%).
- **Hyperactive/Impulsive (6 or more items):** Semi-Govt. schools (36.02%) again scored higher than Private schools (10.00%).
- **Combined (12 or more items):** A greater percentage of Semi-Govt. schools (46.80%) met the combined criteria compared to Private schools (10.00%).

Overall Statistical Interpretation:

- **Combined Type**

The present study, conducted among 407 primary school children, revealed an overall ADHD prevalence of 14.25%. Among the subtypes, Inattentive type (20.88%) was found to be more common compared to Hyperactive/Impulsive type (13.02%), while 14% of children met the combined criteria (≥ 12 items) in ADHD combined Type

- **Gender-wise:**

- Boys showed a higher prevalence (**16.67%**) compared to girls (**10.06%**).
- Inattentive symptoms were more frequent among boys (**23.64%**) than girls (**16.10%**).
- Hyperactive/Impulsive symptoms were also slightly higher in boys (**13.95%**) than girls (**11.40%**).

- **School-wise:**

- Semi-Govt. school children demonstrated a much higher prevalence (**46.80%**) compared to Private school children (**10.00%**).
- Inattentive type was predominant in Semi-Govt. schools (**59.57%**) compared to Private schools (**15.83%**).
- Hyperactive/Impulsive type was also higher in Semi-Govt. schools (**36.02%**) than in Private schools (**10.00%**).

DISCUSSION

The objectives of our study were to determine the overall prevalence of ADHD among primary school children in Sahaspur block in Dehradun. According to our findings the overall prevalence was found to be 14.25% in the combined subtypes, while 20.88% were inattentive types and 13.02% were hyperactive/impulsive type. The global prevalence of ADHD in children and adolescents in a systematic review and meta analysis conducted by Salaria, N., et.al (2023) was found to be 7.6% in children aged 3 to 12 years while the prevalence of ADHD among children in a research conducted in Hyderabad was found to be 9.57% (Pathan, H.G. et.al. 2024).

While studying the gender differences in the prevalence of ADHD, percentage of boys (16.67%) in diagnosing ADHD was more than the girls (10.06%). The findings of the study were identical to other researches conducted in this field where boys had more incidence of ADHD than the girls where ADHD in boys were found to be 10.1% and 7% in girls (Z. Tabibi et al. (2025)).

Sharma, P. et.al. also conducted a research in 2020 where they studied the **prevalence and correlates of Attention Deficit Hyperactive Disorder (ADHD) risk factors among school children in a rural area of North India**. Their study found a reasonably high prevalence of ADHD in 6.34% of students aged 6 to 12 enrolled in government schools in a rural location which resonates with our findings where the prevalence of ADHD in children in semi-government schools were marked higher (46.80%) than the overall prevalence of ADHD (14.25%) while prevalence of ADHD in children from private schools (10.00%) was found be less than the overall prevalence rate.

LIMITATIONS OF THE STUDY

This study had several limitations that may have influenced the accuracy and general scope of the results:

- **Limited school participation:** Many schools declined permission to conduct the survey. As a result, the sample size was smaller than intended, making it difficult to estimate the true prevalence of ADHD among children in the district.
- **Parental reluctance:** Some parents were unwilling to fill out the forms, which may have introduced bias in the responses and affected the reliability of ADHD detection.
- **Gaps in teacher awareness:** A number of teachers lacked familiarity with ADHD symptoms. This limited their ability to identify behavioural patterns accurately, which may have led to inconsistencies in the assessment.
- **Excluded institutions:** Residential schools and others that did not meet the inclusion criteria could not be surveyed. This left certain sections of the school-going population unrepresented in the study.

CONCLUSION

Attention Deficit Hyperactivity Disorder is a neurological disorder (Sim, J.Y., et.al. 2010) causing behaviour difficulties which can affect an individual's daily life, causing issues at home and in school (Chawla, G.K., et.al. 2022) with the onset during childhood (Yoon, J.M., et.al. 2009), affecting 5-7% of children all over the world (A. Assiri, H.A. 2025) with major symptoms including variability in attention and impairment in inhibitory control (Ambalavanan, A., et.al. 2025). The findings highlight that inattentive symptom are the most prevalent form of ADHD among primary school children. Boys and students from Semi-Govt. schools showed higher difference in ADHD prevalence compared to Girls and students from Private schools. This indicates that both gender and school type are important socio-demographic variables influencing ADHD prevalence in this region.

Early identification allows timely support, which can improve a child's ability to manage symptoms and adapt well across home, school, and social environments. Without appropriate intervention, children with ADHD may face ongoing academic difficulties, low self-esteem, and trouble building or maintaining healthy relationships.

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