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Prevalence of attention deficit hyperactivity disorder in school going children aged between 5-12 years in Karad

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Abstract
Background: Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood psychiatric disorder that affects 2% to 14% of school age children. It is characterized by age inappropriate level of inattention with or without motor over activity and impulsivity in academic and social spheres. Boys are more affected than girls and male female ratio is 4:1. Although ADHD is the most common condition, the evidence from Indian studies is very less. Many studies are required in India to see the magnitude of ADHD. This study aims to determine the prevalence of ADHD in school going children (5 years to 12years) and to know the difference between government and private schools as well as to determine male to female ratio in Karad.
Methods: This was a cross-sectional study done in Karad by convenience sampling method. A total 18 schools comprising of both private and government were selected. 3120 Children aged between 5-12years studying in these schools were included in the study. Introduction about ADHD was given by Pediatrician to the teachers followed by screening for ADHD was done by teachers using Conner's teachers rating scale for all children. Positive cases of these were screened with Parents by Pediatrician by using Conner's parent rating scale. Children who were detected positive in Parents and Pediatrician rating scale were interviewed by the Psychiatrist at Krishna institute of medical sciences Hospital, Karad and ADHD was diagnosed by using DSM V criteria along with IQ assessment and treatment was started for the needy.
Results: The prevalence of ADHD in our study was 1.3%. Male to female ratio was 1.6:1. The children belonging to Hyperactivity type were 34.1%, inattention was 9.8% and combined type was 56.1%. Prevalence in private school was 1.25% and Government school was 1.37%. Total dropouts were 2.5% who did not reach the hospital for the final diagnosis.
Conclusion: ADHD is prevalent worldwide and it is also one of the emerging disorders in our country. It constitutes a significant mental health disorder in children and 50% of this disorder will be carried to adulthood. In our study we had prevalence of 1.3% ADHD and 2.5% dropouts due to lack of awareness of the disease, their work pressure, distance, social and financial constricts. It is high time to identify the disorder by creating awareness about ADHD by Pediatricians among the Teachers, Parents and Primary care Physicians, in order to prevent the social and academic impact of the disease. By introducing an ADHD standard screening methods in all schools along with the regular health check-ups will bring awareness in the society for the healthy future of the children. Lastly every school should have a counselor to overcome ADHD and other related problems.

Keywords: attention deficit hyperactivity disorder, DSMV

Introduction

Attention deficit hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood and one among the most common chronic health conditions affecting school-age children. It is characterized by inattention, increased distractibility with difficulty sustaining attention, poor impulse control and decreased self-inhibitory capacity, motor over activity and motor restlessness. The prevalence of ADHD in 5% to 10% of school aged children. Most of them are western studies and there is a little information about the same from India. Children with ADHD have difficulty in performing scholastically to their optimum levels. This translates to stress on the family and in turn has an emotional impact on the child. ADHD is often undiagnosed in children. This is usually due to lack of awareness of ADHD among parents and teachers. There is a need for continued teamwork on prevalence of ADHD in our country, thereby sensitizing the parents, teachers and primary care physicians.

This study will provide the much needed epidemiologic data on ADHD as well as understand the influence of socioeconomic factors in the same. This in turn would help in designing the programme to increase the awareness of ADHD in parents as well as teachers. This study also helps in knowing the differences in prevalence of ADHD between Private and Government schools by including the socio-economical and educational factors causing impact on children's mental health. This study will throw light on the male female ratio in the prevalence of ADHD.

Aims and objectives

1. To study the Prevalence of ADHD in children aged 5-12 years in schools in Karad.
2. Compare the Prevalence of ADHD in Government and Private Schools.

3. To create awareness among the teachers and parents about ADHD in children.

Materials and Methods

Study Area: The study was conducted in schools in Karad.

Study Design: Cross sectional- descriptive.

Study Duration: Time period of twelve months i.e., JULY 2017 to JUNE 2018

Study Population: School children in the age group 5 to 12 years in Karad.

Exclusion criteria

Children < 5 years and >12 years

Children with organic disorders, conduct disorders and oppositional disorder

Children studying in schools outside Karad limits.

Statistical analysis

Descriptive statistics-percentages and proportion and inferential statistical test

Ethical clearance

The study protocol was submitted to the ethical committee of Krishna institute of Medical Sciences, Karad and clearance obtained before the study was commenced.

Method of collection of data (Including sampling procedure): Sampling procedure: Convenience sampling

Sample size

N= 3120. Sample size has been calculated taking prevalence of ADHD among school going children as 5% at 5% significance level and 10% allowable error. It is calculated using the formula:

$$N = 4PQ/E2$$

Where

P = Prevalence

Q = 100-P

E = Allowable error of P

Collection of data

The collection of data was done in 4 phases. These rating scales assist in determining whether children between the ages 5 to 12 years might suffer from ADHD.

Study Instruments

Semi-structured Performa was prepared after discussion with the psychiatrist. It is a questionnaire with 12 simple questions from DSM-V criteria related to the ADHD symptoms. It has 6 questions related to inattention, 6 questions related to hyperactivity and impulsivity. It was translated to Marathi for easy understanding and for use in Marathi medium schools.

Hyperactivity and Impulsivity

Six or more symptoms of hyperactivity- impulsivity for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for the person's developmental level

- Often fidgets with or taps hands or feet, or squirms in seat.
- Often leaves seat in situations when remaining seated is expected.
- Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
- Often unable to play or take part in leisure activities quietly.
- Is often "on the go" acting as if "driven by a motor".
- Often talks excessively.
- Often blurts out an answer before a question has been completed.
- Often has trouble waiting his/her turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games)

Results and Observations

We found 41 children with ADHD, which translates to a prevalence rate of 1.3% in school going children of age group 5 to 12 years. The prevalence was 1.6% in boys and 1% in girls.

Table 1: Prevalence rate of ADHD by gender

ADHD	Gender		Total
	Female	Male	
No	1337(99%)	1742(98.4%)	3079(98.7%)
Yes	13(1%)	28(1.6%)	41(1.3%)
Total	1350(100%)	1770(100%)	3120(100%)

The above table also shows the sex distribution of the children screened which was 56.7% boys and 43.3% girls (1.30:1) whereas the boys: girl ratio among ADHD children is 1.6:1 and is significant. (p value<0.001)

Table 2: Prevalence rate based on age

Age in Years	ADHD	Non ADHD	Total
5	3 (7.14%)	39	42(1.3%)
6-8	9(1.06%)	839	848(27.2%)
9-10	11(0.96%)	1131	1142(36.6%)
11-12	18(1.65%)	1070	1088(34.9%)
Total	41(1.3%)	3079	3120(100%)

This table shows the prevalence of ADHD in different age groups. The prevalence is highest in 5 years group and lowest in 9-10 years age group. The prevalence tends to decrease as age progresses.

Distribution of ADHD children based on different subtypes of disorder

- In children of 5 years prevalence of ADHD is 7.14%. The hyperactivity type is 2.38%, combined type is 4.76% and inattention type is 0%
- In children of 6-8 years prevalence of ADHD is 1.06%. The hyperactivity type is 0.47%, combined type is 0.35% and inattention type is 0.23%.

- In children of 9-10 years prevalence of ADHD is 0.96%. The hyperactivity type is 0.35%, combined type is 0.52% and inattention type is 0.09%.
- In children of 11-12 years prevalence of ADHD is 1.65%. The hyperactivity type is 0.46%, combined type is 1.10% and inattention type is 0.09%.

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