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SCREENING OF ATTENTION DEFICIT HYPERACTIVITY DISORDER SYMPTOMS IN A CROSS SECTION OF SCHOOL AGE CHILDREN

[1]Muazzam Khalid, [2]Muhammad Atif Aziz, [3]Abid Hussain

[1]Federal Medical & Dental College, Islamabad.

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Abstract:

Objectives: *To find the likeliness of having ADHD in a sample of children. To find out most common type of symptoms of Attention Deficit Hyperactivity Disorder. This study is based on screening tool so word 'likeliness' is used to express the expected prevalence.*

Methodology

- ***Study Design:*** *Descriptive, Cross Sectional Survey.*
- ***Study Setting:*** *Study was conducted in schools of Islamabad. Parents of children were met at schools and interviewed.*
- ***Study Duration:*** *September to November 2016.*
- ***Sample Size:*** *A random sample of 101 children between age of 4-14 was taken.*
- ***Sampling technique:*** *Systematic random sampling.*
- ***Study tool:*** *SNAP-IV 26 rating scale.*

Results*: Likeliness of ADHD presence is 3.96% in sample population. Most common type was ADHD-Hyperactive. All ADHD positive scoring children also had Oppositional defiant disorder, suggesting 100% co morbidity. Symptoms of Oppositional defiant disorder were positive in 5.9% children.*

Conclusion*: Expected prevalence of ADHD is 3.9% in Islamabad. Most common type is ADHD-hyperactive type. Oppositional defiant disorder is associated with all ADHD positive scorers and it is more prevalent than ADHD.*

Key Word: *Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, School Children, Screening.*

Corresponding author:

Muazzam Khalid,

Federal Medical & Dental College, Islamabad.

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INTRODUCTION:

Attention Deficit Hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood and one of the most prevalent cognitive conditions affecting school-age children. ADHD manifests as inattention, increased distractibility and difficulty sustaining attention; poor impulse control and decreased self-inhibitory capacity; motor over activity and motor restlessness.[1] Although some degree of hyperactivity is found in all normal school age children, the diagnosis of ADHD is limited to developmental inappropriate degree of gross motor activity, impulsivity, and inattention that appears in at least two contexts (e.g. home and school) and has been present for at least six months
before the age of seven years.[2] ADHD has three subtypes, Inattentive type, hyperactive/impulsive type and combined. Combined type manifests with both symptoms inattention and hyperactivity. There are co-morbidities with are present in patients with ADHD, of which Oppositional defiant disorder(ODD) is one of the most common.[3] ODD is characterized by a pattern lasting at least 6 month of angry, irritable mood, argumentative/defiant behavior, or vindictiveness exhibited during interaction with at least one individual who is not a sibling.[4].

Etiology of ADHD is multifactorial studies have found correlations with several risk factors. Important are genetic predisposition,[5][6] trauma to brain,[7] social and family environment,[8] cigarette smoking, alcohol use during pregnancy.[9][10] Food colors and additives have also been stated as risk factor for developing ADHD in children.[11]
A diagnosis of ADHD is made primarily in clinical settings after a thorough evaluation, including a careful history and clinical interview to rule in or to identify other causes or contributing factors; completion of behavior rating scales. Diagnostic and Statistical Manual of Mental Disorders, currently 5th edition named as 'DSM-V' is most important behavior rating scale for diagnosis of ADHD.[12] Many other scales have been used for diagnosis and evaluation of ADHD. The one used in this study is 'SNAP-IV 26'. The detail about this rating scale is given in subsequent discussion.

Many studies around the world has been conducted to find out the prevalence of ADHD in children. They suggest different data in various regions. Prevalence based on meta-analysis of 41 studies around the world gives a figure of 3.4%.[13]

The purpose of this study was to screen a sample population of school age children Islamabad and to find likeliness of having this disorder and to identify the most prevalent type of ADHD in Islamabad. We cannot call it prevalence because this study was conducted via screening tool rather than a diagnostic.

MATERIAL & METHOD:

Design of study was cross sectional survey type. Sample size was calculated by using WHO calculator with confidence interval 0f 10%, suggesting a sample of 96. Twelve primary and elementary schools were selected randomly in Islamabad city and sub urban area. Permission was sought from principle of each schools. From each school ten children selected. Of these only those were included whose parents were voluntarily agreed to participate.

Parents of selected children were met in school while on their visit to school. Informed consent was taken from all participants and assured of confidentiality. They were interviewed and a pre-designed rating scale was filled by the investigators themselves.

A pre-structured rating scale 'SNAP-IV 26'[14] was used for data collection. It was obtained from an open resource Children ADHD resource Alliance (CADDRA), a Canadian organization working for wellbeing of children with ADHD. SNAP-IV-26 can be as much 90-97% sensitive and specific when used with appropriate cut off scores for parent and teachers.[13] This rating scale can be administered to parents as well as teachers of children. But in this study, we only interviewed parents as it had more accuracy with the findings. The 'SNAP-IV 26' screens for nine symptoms of ADHD hyperactive impulsive type, nines symptoms of ADHD inattentive type and eight symptoms of Oppositional Defiant Disorder(ODD). Risk scores were produced by summing and then calculating the average scores for each of the symptom clusters, as well as a combined score for the hyperactive-impulsive and inattentive clusters. Data was analyzed using 'IBM SPSS Statistics' V.21.

RESULTS:

Total 110 parents were asked to participate, 83 agreed to participate. Response rate was 100%. Data about 101 children was obtained, 61.4% male and 38.6% female (n=62/101, n=38/101 respectively). It included 73 individual children and 28 other inclusive of their siblings(14x2). Mean age of the children was 8 ± 3years.
According to screening results 4 children were likely to have ADHD. This suggests a prevalence of 3.96%. Among these 4 children 3 were male and 1 female. Prevalence in male is 4.83% and in female 2.56%. Male to female ratio was 1.9-1.

	Total	ADHD	%age
Male	62	3	4.8
Female	39	1	2.5
Total	101	4	3.9

Fifty percent with positive findings were found in age group 6-8 years. Among these children most common symptomatology is ADHD Hyperactive type.

Types of ADHD	Prevalence (among 4)	Percentage
Hyperactive	3	75
Inattentive	1	25
Mixed	0	0

Association with Opposition Defiant (ODD) Disorder has found to be 100% in this study. Besides these, two other ODD cases have been identified which do not have ADHD. ODD has found to be more prevalent than ADHD with overall prevalence of 5.9%.

Presence of ODD in	%age
ADHD negative scores	2
ODD in ADHD positive scores	100
Combined	5.9

Positive Scores of oppositional defiant disorder

DISCUSSION:

Prevalence Worldwide prevalence of ADHD is estimated to be 3.4-17%.[15][16] In South Asian region prevalence has found as high as 10-20%.[17]

In Pakistan, sufficient data is not available. Studies have claimed prevalence around 2.49% and predominant in male.[18] According to a study conducted in child psychiatry department of university hospital in Karachi 34% diagnosed with ADHD, highest among all child psychiatric disorders presenting at OPD.[19]

According to this screening survey 3.9% of children in the community sample are likely of having ADHD. Which is quite consistent with previous studies.

Children with ADHD may have poor performance at school this may lead to disinterest in studies. Studies have proved that ADHD can be a potential reason for poor performance of children in school, even dropout from school which is a reason of low literacy in Pakistan.[20]

Gender Association: most of the work done in prevalence studies of ADHD indicates that this disease is more common in males than in female. A study done 2007 claims a male to female ratio of 2.3 **:** 1.[21] Another study conducted in 2003 in Karachi claims that ADHD in male is three times more common than in female.[22] In this screening study male to female ratio has found to be 1.9 **:** 1. Approximately two times more prevalent in boys.

Prevalent type of ADHD: Types of ADHD are almost equally prevalent[23] but in this study hyperactive type has found to be most common in 75% and inattentive type in 25%.

Likeliness of ODD: Oppositional Defiant Disorder is a neurobehavioral disorder distinct from ADHD. It is most common co morbidity occurring with ADHD.[24] It prevalence is considered around 10% in general population with male predominance.[25] In our study sample we have found ODD prevalence 5.9% which is higher than that of ADHD 3.9%. All of the sample showing positive screening results have also positive ODD results, giving a 100% association. Two sample that don't have ADHD have positive screening results for ODD. Male to female ratio is 3 **:** 1.

ADHD is a disorder that can be treated and the psychosocial problems can be relieved. Parents and teachers can identify behavioral problems and timed diagnosis and treatment can be done for improvement in school performance. But knowledge of parents and teachers is not sufficient in this regard.[26] No strategy has been opted for training and awareness of teachers about behavioral disorders in children. Gravity of

situation can be assessed from a study that revealed that less than 30% general physician and primary pediatric care providers had sufficient knowledge to effectively diagnose ADHD.[27]

Study Limitations: This study is based on a screening tool so exact prevalence cannot be stated. But the screening tool identifies the risk of having or developing ADHD with 90-97% specificity.

Recommendations: Gravity of the situation must be sensed and appropriate steps should be taken by health policy makers. Evaluation and screening of psychiatric disorders must be included in School Health Program. Training programs for teachers as well as parents should be organized for evaluation and management of children suffering from behavioral disorder.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. No.	**Author-s Full Name**	**Contribution to the paper**
1	**MUAZZAM KHALID**	Study planning, Designing, Coordination in data collection, Paper writing and editing
2	**MUHAMMAD ATIF AZIZ**	Study planning, Designing, Coordination in data collection, Paper writing and editing
3	**ABID HUSSAIN**	Study planning, Designing, Coordination in data collection, Paper writing and editing
4	**SUFYAN ALI**	Data collection
5	**IBTESAM HAIDER**	Data collection