TENDENCY TOWARDS DEVELOPING ADHD AMONG CHILDREN OF GRADE 3 – 5 IN VARIOUS SCHOOLS OF KARACHI

Majid Ali Abidi, Salman Mansoor

ABSTRACT

Objective: This study aimed to describe the frequency of children at high risk of developing ADHD and its association with psychosocial factors in children of grade 3-5 in various schools of Karachi.

Design: Descriptive study.

Place and Duration of study: This study was coducted in various schools of Karachi from January to June 2008.

Subjects and Methods: This study was done using pre-tested self administered questionnaire. The study population was composed of 553 children from grades 3 to 5. The parents filled the questionnaire on assessment of children behavior. All ethical considerations were taken into account in this regard. Data for demographic variables for frequencies and association between variables was analyzed on SPSS version 12.0. Significant level was $p<0.05$.

Results: Among a total of 553 children from three different schools, the suspected children were 131; among them 111 had a score of 20-29 on the behavior rating scale and 20 had a score of 30 and onwards. There were 89 males out of 319 (27.8%) and 42 females out of 234 females (17.9%) who were found positive. This made a total 23.6% students of both the genders who showed strong tendency towards ADHD. Among the differences which were observed gender, father's occupation and different schools were statistically significant (p-value <0.05) which made the strength of this study.

Conclusion: Children with ADHD are frequently encountered in the primary care setting. It is important that the diagnosis of this condition by primary care providers be based on procedures supported by evidence from empirical investigations. Clinicians should use ADHD-specific rating scales completed by caregivers and teachers in their efforts to identify children suspected for ADHD.

Key words: Prevalence, Attention Deficit / Hyperactivity Disorder, ADHD, School Going Children

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) has defining features of inattention, over activity, and impulsivity. It is the most frequently encountered childhood-onset neurodevelopment disorder in primary care settings[1]. ADHD is generally a chronic disorder with 30 to 50% of individuals diagnosed in childhood continuing to have symptoms into adulthood[2, 3]. If untreated; the disorder can have long-term adverse effects into adolescence and adulthood. As they mature, adolescents and adults with ADHD are likely to develop coping mechanisms to compensate for their impairment[4, 5]. Though previously regarded as a childhood diagnosis, ADHD can continue throughout adulthood[6]. It is now recognized that ADHD is a chronic condition that will persist over the life span[7]. ADHD has a strong genetic component[8].

Global prevalence for children is approximately 5%, with wide variability dependent on research methodologies utilized in studies[9]. No figures are available for Pakistan[10]; however, a study 3 in neighbouring India reports a prevalence of 8.1% among children referred to the Psychology outpatient department of a tertiary care hospital[11]. There is however both geographical and local variability among studies.

Methods of treatment usually involve some combination of medications, behavior modifications, life-style changes, and counseling[12]. A 2006 meta-analysis found a lack of data regarding ADHD drugs' potential adverse effects, with very few studies assessing the safety or efficacy of treatments beyond 4 months, and no randomized controlled trials assessing either for periods of usage longer than two years[13-15]. Treatment of pre-school children is not recommended[16].

Majid Ali Abidi, Head of Psychiatry, Hamdard University Hospital, Karachi.
Email: majidabidi@yahoo.com

Salman Mansoor, Medical Officer, Hamdard University Hospital, Karachi

Correspondence:

Dr Majid Ali Abidi

SUBJECTS AND METHODS

We planned an observational screening study involving multiple schools of Karachi. The American Psychiatric Association lists 14 behavioral checkpoints for an ADHD test and Attention Deficit Disorder test, of which at least eight symptoms must be present for a child to be classified as Attention Deficit Disorder, with or without hyperactivity. This self ADHD test and Attention Deficit Disorder test expands on those 14 behavior checkpoints of hyperactivity and attention problems to include finer details of an ADHD test and Attention Deficit Disorder test. For this purpose a questionnaire was so designed to assess the prevalence of Attention Deficit Hyper Activity Disorder in school going children from grade-1 to grade-5. The Questionnaire was translated into Urdu (the local language) and distributed to the parents of children through school administrations and to parents.

The questionnaire was distributed to parents through school administrations who on their assessment of their child's behavior completed it. The technique adapted for choosing schools was non probability convenient. A sample size of 553 was collected for this study. The questionnaire of the study was distributed to all the children who were in grades 3-5 at multiple schools and residential units of Karachi. The schools were selected randomly and on the convenience basis of researchers. The school administrations were given a general briefing about the disorder as to convey to the parents. The consent from parents was obtained through respective school administrations. Questionnaires were then collected from schools after being filled by parents at their homes on the basis of general behavior assessment of their children.

RESULTS

Of those 553 children 16 (2.9%) were from School A, 237 (42.9%) from B and 300 (54.2%) from School C. There were overall 319 (57.7%) male and 234 (42.3%) female children. Numbers of students in grade 3 were 96 (17.4%), in grade 4 were 219 (39.6%), in grade 5 were 238 (43.0%). The number of students who were suspected on the basis of behavior rating scale were 4 out of 16 from school A (25%), 42 out of 237 from school B (17.7%) and 85 out of 300 from school C (28.3%).This made a total of 131 students who were suspected from 553 students making up 23.6% students who showed tendency towards Attention Deficit Hyperactivity disorder or Attention Deficit Disorder (Figure 1).

On the basis of gender there were 89 males out of 319 total males (27.8%) and there were 42 females out from a total of 234 females (17.9%) who were screened out the p-value for this difference was significant (<0.05) (Table 1).

Among different grades in class 3 out from a total of 96 there were 26 (27%) ,in class 4 out from a total of 219 there were 41 (18.7%) and in class 5 out from a total of 238 there were 64 students (26%) who needed further assessment. The score of the child when cross tabulated with the parent's inter-relation out of 428 who marked good relation the suspected cases were 99 (23.1%), in parents who did not comment about their relationship total 124 ADHD was suspected in 32 cases (25.8%).No one wrote a remark of bad relation and there was inter-parent separation in 1 case but the child scored normal. Out of 131 cases that came out with a score between 20-29 were 111 and 20 children scored greater than 30. We found in our study that there was a significant relationship between the child score and father's occupation p-value (<0.05) (Figure 2).

There were 315 children in whom the fathers were professionals. Among them 256, (81%) had a score of (0-19), 51, (16%) scored (20-29), 8, (2.5%) had a score of 30 and above. There were 10 fathers who were skilled labors 5, (50%) among them scored (0-19), 5 scored (20-29). There were none among the group skilled labors who scored 30 or above. Children in whom the paternal occupation was general Labor they were 6 in total. Among this group 4, (66%) scored (0-19), 2, (33%) scored (20-29) and none scored 30 or above. Children in families where father's occupation was business there was a total of 75 children. Among them 51, (68%) had a score between (0-19), 20, (26%) scored (20-29), 4 (5.3%) scored 30 or above. In the group where Father's occupation was clerical there were 14 children. From them 11 (78%) scored (0-19). 3 (21%) had scores between (20-29) and none scored 30 or above. There were 86 children in whom the father's were self employed. In these children 58 (67%) had scores of 0-19, 22 (25%) scored between 20-29, 6 (6.9%) had scores of 30 or above.

Table 1

Score of the children calculated on the ADHD Test cross-tabulated to gender

	Score	Score	Score	
Gender of Child	0-19	*20-29*	30 and Higher	TOTAL
Male	230	77	12	319
Female	192	34	8	234
TOTAL	422	111	20	553

Figure 1

Score Of Children In Different Schools

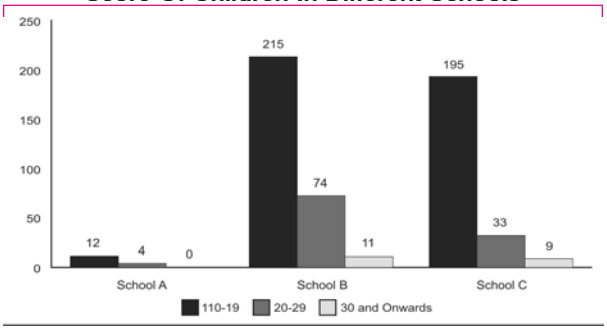
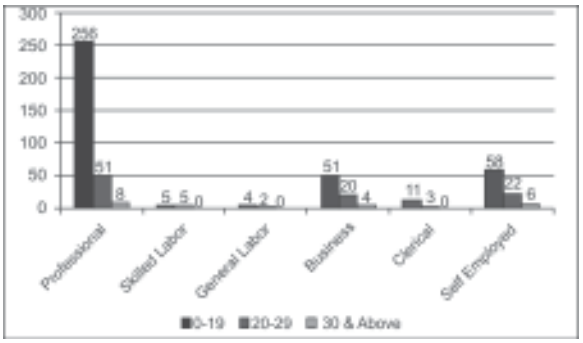


Figure 2
Score of children on ADHD rating scale linked to father's profession



DISCUSSION

ADHD is one of the most highly prevalent psychiatric disorders in childhood and is associated with significant functional impairment. There is a dire need for studies concerning this disorder in our country.

Given the widespread attention ADHD has received, it is important to examine the epidemiology of this disorder and methods to assess it. Most studies of ADHD have come from referral populations seen in tertiary care centers. They, therefore, reflect unknown sampling biases and cannot provide estimates of rates of ADHD in non referred population.

Three studies examined prevalence rates of ADHD among elementary school children in the general population who had been screened for symptoms of behavior problems[17-19]. Formal diagnostic instruments were administered only to children who were identified in the initial screening procedure.

Among the ADHD-specific rating scales that were reviewed, the ADHD Index and the *DSM-IV* Symptoms Scale of the 1997 revision of the Conners' Rating Scale and the Hyperactivity and Inattention Subscales of the SNAP Checklist performed well in discriminating between children with ADHD and normal controls[20, 21]. It should be noted, however, that while parent-or teacher-completed broad-band scales are not recommended to specifically diagnose ADHD, global rating scales may be useful to screen for co-occurring problems. Given the recommendations set forth in the practice guideline that the assessment of ADHD requires evidence of symptomatology from caregivers and school personnel (teachers), we endorse the use of behavior rating scales as a time-efficient and cost effective means to gather data regarding the display of the core symptoms of ADHD[22]. In addition, the collection of behavior ratings from teachers and caregivers will full fill the *DSM* requirement that there be cross-situational evidence of the disorder.

This was a fairly large number of students who needed further evaluation but due to limited resources and time constraints they were not evaluated the possible reasons for such a high incidence rate screened by the behavior rating scale seemed to be was either a low specificity of the test in diagnosing true positive cases. High prevalence of the disorder in our country that remains un-diagnosed. If ADHD is suspected, the diagnosis should be made by a professional with training in ADHD. This includes child psychiatrists, psychologists, developmental/behavioral pediatricians, behavioral neurologists, and clinical social workers. After ruling out other possible reasons for the child's behavior, the specialist checks the child's school and medical records and talks to teachers and parents who have filled out a behavior rating scale for the child. A diagnosis is made only after all this information has been considered.

This high rate of the disorder may be linked to multiple factors that are genetic predisposition, developmental factors, and positive family history of the disorder, psychosocial factors and socioeconomic status of the families[23-25].

On the basis of gender there were 89 males out of 319 total males (27.8%) and there were 42 females out from a total of 234 females (17.9%) who were screened out the p value for this observation was significant (<0.05). This suggested males as having a stronger tendency towards the disorder all the suspected children were not classified further as having Attention Deficit with/ without hyperactivity. Though research literature suggests females of having more tendency towards Attention Deficit without hyperactivity while in boys hyperactivity is seen more commonly[26].

Among different grades in class 3 out from a total of 96 there were 26 (27%) ,in class 4 out from a total of 219 there were 41 (18.7%) and in class 5 out from a total of 238 there were 64 students (26%) who needed further assessment.

Highest tendency towards ADHD (50%) was revealed among children Of Skilled laborers. Followed by (33%) of those in General Laborers. Among those of self employed (32%). In Professionals Tendency towards ADHD (18%) was minimum followed by Clerical Group with (21%). The possible reasons for this significant statistical difference sighted can be due to Families socioeconomic status and Education as the tendency towards ADHD was least among children of Professionals. There was no statistical difference p-value (>0.05) which was observed in relation to Mother's Occupation in children who had higher behavior rating scores. Possible reason for this finding was the reason that our data set had small sample size from families other than Housewives. In 102 families where Mother's were professionals29 (39.7%) had tendency towards ADHD. In 330 families where mothers were housewives95,(22%)children had a tendency towards ADHD. A further investigation into this matter is required to establish the difference as significant.

The score of the child when cross tabulated with the parent's inter-relation out of 428 who marked good relation the suspected cases were 99 (23.1%), in parents who did not comment about their relationship total

124, ADHD was suspected in 32 cases (25.8%).No one wrote a remark of bad relation and there was inter-parent separation in 1 case but the child scored normal. The p-value was more than 0.05 suggesting that there was no relations between the parents inter relation to the incidence rate in ADHD suspected children a further investigation in this matter is required to establish parent's inter-personal relationship as a risk factor for ADHD.

Out of 131 cases who came out with a score between 20-29 were 111 and 20 children scored greater than 30.The score greater than 20 on the behavior rating scale was considered the cut-off value in labeling a child as high risk subject and a score greater than 30 further ranked 20 children on a greater suspicion list. Rating scales are convenient for use in the pediatric office setting, we recommend their use. Information collected via rating scales must be supplemented with a clinical history, including age of onset and duration of symptoms, and careful interview, which includes an assessment of the functional consequences of the behaviors. ADHD and its diagnosis and treatment have been considered controversial since the 1970s[27]. The controversies have involved clinicians, teachers, policymakers, parents, and the media, with opinions regarding ADHD that range from not believing it exists at all to believing there are genetic and physiological bases for the condition, and also include disagreement about the use of stimulant medications in treatment[28-31].

Family physicians should be aware that between 18% and 35% of children with ADHD have one or more associated psychiatric disorders such as anxiety disorder, depression, oppositional defiant disorder (ODD), and conduct disorder (CD)[32].

LIMITATIONS

This study has several limitations. On the basis of this study we cannot confirm the diagnosis of ADHD and ADD so we cannot find out the actual prevalence of the disease in children. The diagnosis should be made by a professional with training in ADHD. This includes child psychiatrists, psychologists, developmental/behavioral pediatricians, behavioral neurologists, and clinical social workers. We did not check for the Co-morbidities of ADHD given the constraint of time and resources. The sensitivity and specificity of behavior rating scale which we adapted has not been confirmed for this we have to further assess those children who have been screened out. This study will serve as a bench mark for further studies. There are further research questions that are generated by our work and should be addressed by community based epidemiological work.

CONCLUSIONS

Children with ADHD are frequently encountered in the primary care setting. It is important that the diagnosis of this condition by primary care providers be based on procedures supported by evidence from empirical investigations. The subject demands extensive research taking into account the co-morbid conditions with Attention deficit hyperactivity disorder. Evidence regarding the utility of behavior rating scales and medical tests in the assessment process is required to find out the exact sensitivity and specificity of each modality. Clinicians should use ADHD-specific rating scales completed by caregivers and teachers in their efforts to identify children suspected for ADHD.

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