Epidemiological Aspects of Attention Deficit Hyperactivity Disorder among pupils in Al-Hilla City – Babylon Province – Iraq

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Abstract

Background: Attention Deficit Hyperactivity disorder was an important issue of mental health and welfare affecting pupils at the primary school specially in conflict affected areas including Iraq.

Objectives: To identify the prevalence and the epidemiological profile of ADHD among pupils in Al-Hilla city –Babylon province/Iraq.

Methodology: This was a cross sectional study which was conducted in 4 randomly selected groups by lottery , the pupils at the primary schools located in AL-Hilla city center, the study was conducted during the academic year 2016-2017 , 100 children were randomly selected from the first three primary school grades. A structured questionnaire was used to assess the behavior of pupils by both teachers and parents after obtaining their verbal consents. The questionnaire was designed according to the formula of diagnostic criteria of attention deficit and hyperactivity disorders used by American Academy of Pediatrics.

Results: The overall prevalence of ADHD in the study group was 14%. The male to female ratio was 3.5:1, there was a highly significant association between this disorder and the presence of family history of this health problem p<0.001, parents tobacco smoking habit was significantly associated with the presence of attention deficit hyperactivity disorder among their children (the combined type)p<0.05, there was significant relationship between poor school achievement and this behavioral problem p<0.05.

In conclusion, ADHD is an important health problem among pupils in Hilla city . Intervention should be made to improve health care providers and teachers’ knowledge about this problem and control the modifiable risk factors.

Keywords: Attention Deficit Hyperactivity Disorder , prevalence, primary school children, Babylon province

Introduction

Attention deficit/hyperactivity disorder is defined as one of the neuropsychiatric disorder occurred among children. The neurodevelopmental process of childhood-onset is mostly attacked by this disorder, leading to induce the neurodevelopmental disorder among them. Symptoms usually take place before 7 years of age, this disorder varies in prevalence in different countries. The nature for these discrepancies across different countries is unknown. However, the differences in terms of demographical, cultural aspects and parameters used for the diagnosis in the studied countries could partially explain this. Pervious research indicated that the prevalence for this disorder was ranged from 5.4%-8.7% in most of African countries, however, 3.2% in Nigerian community. This trend of variations was also found in another continent like Asia. In one of the epidemiological studies conducted in Iran mention prevalence 13%, while (2.7%) among the pupils in Saudi Arabia. Results also came from a comprehensive study that was included 21 different countries demonstrated that the children who were from Japanese and Finnish populations had the lowest scores, while the score was...
the highest among those from Jamaica and Thailand. In general, the symptoms for ADHD may be decreased when the person get older. This could be stemmed from the fact that the self-control and neural connections in the brain are seen to be more developed and less influenced during puberty. Many environmental factors and other factors like life style, mother’s smoking during pregnancy or an early life of childhood, stress among pregnant, and low birth weight (<1.5kg) have been implicated with incidence of ADHD. Moreover, other medical problems such as hypoxemia, encephalitis, trauma, and brain injury could increase the incidence of ADHD. There was also a considerable evidence from a study that indicated that the incidence of ADHD was higher among first-degree family members of ADHD, suggesting that this disorder could be the most genetic psychiatric disorder. A study conducted in Jordan revealed that teachers perception was medium, no significant differences based on specialization and years of teaching experience, and suggests the importance of training teachers on enhancing their knowledge to identify students with attention deficit hyperactivity disorders. A recent study conducted in Iraq shows that there is an association between computer-based video games, or mobile device use and behavioral changes like hyperactivity, attention deficit disorder among Iraqi children in Diyala province. Studies showed that more difficult children are likely to be particularly vulnerable to higher levels of media exposure, daily injuries, poor school performance and sleep problems. A study indicated that the drug abuse among adults was found to be linked with the cases of ADHD. This study was carried out to identify the prevalence of ADHD among elementary school children in their early years. The male to female ratio is 3.5:1. Table (2) explains that this behavioral problem is more common in young age (7 years) and less among older children but this difference does not reach significant level, chi-square is 2.8251. The p-value is .243527. The result is not significant p > .05. Table (3) reveals that there is a statistically significant association between parents tobacco smoking habit and having children with ADHD problem p<0.05. Table (4) depicts the very high significant statistical association between ADHD and the presence of positive family history of this behavioral problem among Iraqi children.

### Results

Table (1) shows that the overall prevalence of ADHD among elementary school children in their early year is 14%, the males are highly predominant 22%. The male to female ratio is 3.5:1. Table (2) explains that this behavioral problem is more common in young age (7 years) and less among older children but this difference does not reach significant level, chi-square is 2.8251. The p-value is .243527. The result is not significant p > .05. Table (3) reveals that there is a statistically significant association between parents tobacco smoking habit and having children with ADHD problem p<0.05. Table (4) depicts the very high significant statistical association between ADHD and the presence of positive family history of this behavioral problem among Iraqi children.

Chi square= 34.9045 df=1 p<0.001.
Table (5) shows that there is a statistically significant association between poor school achievement and development of attention deficit hyper activity disorder among the study group \( p < 0.05 \).

**Table 1** (Distribution of ADHD among the study group by gender)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Healthy NO (%)</th>
<th>ADHD NO (%)</th>
<th>Total NO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>39 (78)</td>
<td>11 (22)</td>
<td>50 (100)</td>
</tr>
<tr>
<td>Female</td>
<td>47 (94)</td>
<td>3 (6)</td>
<td>50 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>86 (86)</td>
<td>14 (14)</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

* Chi square value = 5.34

* df = 1

* \( p < 0.005 \)

**Table 2** (Frequency distribution of school children with ADHD by age)

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Numbers of pupils</th>
<th>Number of (ADHD) pupils</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>35</td>
<td>8</td>
<td>57</td>
</tr>
<tr>
<td>8</td>
<td>35</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

The chi-square statistic is 2.8251. The \( p \)-value is .243527. The result is *not* significant \( p > .05 \).

* df= 2

**Table 3** (Frequency distribution of the study group according to parents smoking habits)

<table>
<thead>
<tr>
<th>Smoking of the parents (fathers)</th>
<th>ADHD NO (%)</th>
<th>Healthy children NO (%)</th>
<th>Total NO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking Positive</td>
<td>10 (71)</td>
<td>31 (36)</td>
<td>41 (41)</td>
</tr>
<tr>
<td>Smoking negative</td>
<td>4 (29)</td>
<td>55 (64)</td>
<td>59 (59)</td>
</tr>
<tr>
<td>Total</td>
<td>14 (100)</td>
<td>86 (100)</td>
<td>100 (100)</td>
</tr>
</tbody>
</table>

*Chi square = 6.231
* df=1
* p<0.05

**Table (4) frequency distribution of family history of ADHD and normal school children.**

<table>
<thead>
<tr>
<th>Family history</th>
<th>ADHD NO (%)</th>
<th>Healthy NO (%)</th>
<th>Total NO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>11 (79)</td>
<td>9 (10.5)</td>
<td>20 (20)</td>
</tr>
<tr>
<td>Negative</td>
<td>3 (21)</td>
<td>77 (89.5)</td>
<td>80 (80)</td>
</tr>
<tr>
<td>Total</td>
<td>14 (100)</td>
<td>86 (100)</td>
<td>100 (100)</td>
</tr>
</tbody>
</table>

* Chi square= 34.9045
* df=1
* p<0.001

**Table 5 - Frequency distribution of school children with ADHD and their school performance.**

<table>
<thead>
<tr>
<th>School performance</th>
<th>ADHD NO (%)</th>
<th>Healthy NO (%)</th>
<th>Total NO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low school performance</td>
<td>8 (57)</td>
<td>16 (18)</td>
<td>24 (24)</td>
</tr>
<tr>
<td>Normal</td>
<td>6 (43)</td>
<td>70 (82)</td>
<td>76 (76)</td>
</tr>
<tr>
<td>Total</td>
<td>14 (100)</td>
<td>86 (100)</td>
<td>100 (100)</td>
</tr>
</tbody>
</table>

* Chi square=9.8036
* df=1
* p<0.05

**Discussion**

The overall prevalence of ADHD (combined type) among school children in early years in the current study was 14%. This prevalence was less than that reported by other study conducted on Iranian children of the same age group in which the incidence was 25.8% when the parents’ evaluation was considered, while it was when their teacher’s evaluation was taken into account. The prevalence of this study is higher than that observed in pupils ranged between 6 until 12 years old in AL-Saudi Arabia (11.6%) and higher than the prevalence reported in Egypt (12.6%) which was measured among children in four primary schools in AL- Mansura province. And even lesser than that reported that among primary school children in Egypt which was reported to be 6.9%. ADHD is more prevalent in male children in this study with ratio 3.5:1.

This finding was in the line with previous studies. The study reveals that there is a significant association between having ADHD problem and positive family history. ADHD is a condition that results from the interaction among three premises, namely, genetic, environment, and developmental traits. However, the genetic promise could cover most of the cases. A relationship is identified between ADHD and parents tobacco smoking habits this finding depicts the possible role of the environmental pollution. A study reported the
role of Research indicated that mother’s smoking during pregnancy or an early life of childhood had increased the incidence of ADHD for a child. In addition, a study indicated that the born girls who were exposed to nicotine in their prenatal life had higher chances to develop hyperactivity and/or impulsivity symptoms. Zhu and his colleagues demonstrates that the born babies came from smoker mums and non-smoker dads had higher risk of ADHD than those came from the vice-versa, highlighting the role of mother’s smoking in the development of ADHD. The adverse effects of tobacco smoke could be derived from their ingredients that are accounted to be more than four hundreds molecules. Nicotine is among them that was shown to be closely related in the neurodevelopmental disorder. De Zeeuw et al investigated the brain volumes using the imagining scan from anatomic magnetic resonance indicated that the patients with ADHD that was prenatally exposed to the smoking from their mums had smaller cerebellum volume compared to those had no smoking. This study shows a significant association between poor school achievement and having Attention Deficit Hyperactivity Disorder this may be related to poor attention, this finding goes in line with findings of other researchers who explain many reasons for poor school achievement. Good education could be one of the effective approaches that enhance the development of our children. In addition, Schools with poor educational programmers do not only influence on our child’s self-esteem, but it could increase the stress of the child’s parents.

Conclusions

the findings of this study indicated that the prevalence of ADHD is relatively high; it is associated with low school performance, ADHD is more prevalent in boys, the prevalence is high among children with positive family history of this disorder and those whom parents are tobacco smokers therefore, considering the importance of students’ mental health, the urgent needs of early diagnosis, effective prevention and management at least of high risk group, training of teachers and school health staff using a bottom line approach(District Team Problem Solving approach). Further comprehensive large scale analytic studies are suggested to deal with this neglected mental health problem. A close collaboration between schools’ authorities and parents is recommendable, and the early diagnosis is crucial.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon – Hammurabi College of Medicine, Iraq and all experiments were carried out in accordance with approved guidelines.

References


16. Younis MS,Sadiq BD,Alsaiddy AM. Clinical Types and associated maternal factors of Attention Deficit /Hyperactivity Disorder ADHD Journal of the Faculty of MedicineBaghdad 2014;56(2):169-72.

17. Al-Karagully TS. Attention Deficit Hyperactivity Disorder is an Overlooked in Children. Iraqi Journal of Medical Science 2006;5(1):48-58


23. Mostafaee, M., Shokati, M., Sarchami, R., Rafiei, H. Prevalence of attention deficit hyperactivity disorder in elementary school students in Hamadan. IJER 2016; 3(1): 63-68


