Prevalence of Attention Deficit/Hyperactivity Disorder (AD/HD) in Primary School Children in Tehran

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Abstract

The aim of this study was to investigate the prevalence of AD/HD in Primary School Children in Tehran. For this reason, we have selected 2615 children (girls and boys) as sample with multi-stage cluster sampling. SWAN Questionnaire was used for collecting of data. Result showed that the prevalence of predominantly inattentive subtype, predominantly hyperactive-impulsive subtype and combined subtype of ADHD are between .6 to .9/1. As well, the findings showed that prevalence of predominantly inattentive subtype and predominantly hyperactive-impulsive subtype at age 9 increased and then decreased after age 9. In boys, prevalence of predominantly hyperactive-impulsive subtype and combined subtype was more than girls. The prevalence of three types of AD/HD was high in families with low socio-economic status.

Keywords: Attention Deficit / Hyperactivity Disorder (AD/HD); Prevalence ; Primary school.

1. Introduction

Attention Deficit / Hyperactivity Disorder is one of the most common problems of children and teenagers and the cause of referrals to psychologist, psychiatrist and consultant of children. This disorder that deeply affects life of thousands of children and their family, has inappropriate developmental symptoms (Hyperactivity, Attention Deficiency, Impulsivity) (Biederman and Faraone,2005). It is being estimated that high number of suffering from ADHD males than females is vacillating between three to one until nine to one in clinical cases and between two to one until three to one in non-clinical cases and because males suffering from to ADHD more than females, they have being referring to consultant and those females that clinical diagnosis applied on them, may from cognition and attention viewpoint have more disorder than similar diagnosis males (Kaplan & Sadock, 2003).
ADHD involves three distinguished kinds of attention deficiency, hyperactivity-Impulsivity, and combined type that each of these disorders in the basis of DSM-IV-TR simply has being diagnoses when before the age of seven, the criteria of that special kind of disorder has been existing for six months, but has not been existing the criteria of ADHD for this period.

Although frequency of ADHD has been reported three to five in United States (APA, 1994), but epidemiology studies have been presented different figures about prevalence of ADHD. For specialists, variability of rate of prevalence to a large extent comes from difference in method of assessment of behaviour and scale of measurement, but it is possible that rate of prevalence be really vary in different countries. Satmary et al (1989) have reported frequency of ADHD in United States in male children schools amounting to nine percent and in female children schools amounting to 3.3 percent. Jenson et al (1999) have reported frequency of ADHD in United States amounting to 5.1 percent and Rhode et al (1999) have reported frequency of it in Brazil amounting to 5.8 percent.

Children who suffering from ADHD because of attention deficiency- hyperactivity exposed to many pathology such as studying and learning problems, behavioural disorders for such as conduct disorder and oppositional defiant disorder and also exposed to internalizing problems and substance drugs in low ages (Spencer et al, 1999). Thus early intervention in home and school environment for reducing above problems is necessary. This kind of interventions also need to epidemiology data such as relationship with age, gender, social- economic situation and level of parents education. Child spends more times in school and since teacher has educational data and considerable behaviours about him by teaching, many researchers have used teachers' data for diagnosis of children suffering from ADHD in their researches (Souver et al, 2004).

So far has been carried out little researches about rate of prevalence of ADHD in Iran. Since ADHD is one of most common problems of childhood stage especially in males and chief complaints of parents and teachers relates to ADHD, also ADHD affects social behaviour, family relations, self-esteem and generally vary aspects of person's life, thus we have studied in this research, the rate of prevalence of ADHD and in primary schools children considering to level of their families' social-economic situation and level of their parents' education.

2. **Method**

2.1. **sample**

This research carried out in primary schools children in Tehran and we used method of multi-stage clustering sampling for selection of cases. In this manner that from each of Tehran's north, south, east, west, were selected two education and training regions and from each of Tehran's education and training regions were selected randomly one male school and one female schools and in each school selected from each of first to fifth classes just one class that all students of each class assessed by teacher.

2.2. **procedure and Data collection instrument**

Type of this study was descriptive and cross-sectional. In order to study of ADHD we used SWAN Questionnaire. The cause of choice of this questionnaire is it's creativity in presentation of positive phrases rather than negative phrases. Psychometric properties of this questionnaire (validity and reliability) had been desirable. This questionnaire has eighteen phrases that has arranged in the base of DSM-IV criteria and has two sections of nine-phrases. Nine-part symptoms of attention deficiency have set in one to nine phrases and nine-part symptoms hyperactivity and impulsivity have set in ten to eighteen phrases. In classification of this questionnaire we used seven-marks ranking that is normal behaviour in average of range of numbering and we give it zero mark. Positive marks (a few under average one; under average two and much under average three) are given to behavioural problems and negative marks (a few up average "-1", upper than average "-2" and much upper than average "-3") are given to lack of behavioural problems and strength of child's behaviour.

Diagnosis of children suffering from ADHD in this questionnaire carries out in the base of criteria of 0.10 upper range of cases marks' distribution and individuals who stand under this range, don't have problem. This questionnaire in contrast to other questionnaires that determine existence and non-existence of psychopathology, can be used as a tool for recognition of children that are in the end of distribution. This questionnaire completes by teacher.

Reliability of SWAN Questionnaire studied in this research. It is used cronbach's Alpha coefficient and retest for counting of reliability. Internal consistency for subscales of attention deficiency (alpha= 0.91), hyperactivity
(alpha=0.93) and combined disorder(alpha=0.94); and retest Alpha coefficient counted for 102 cases (31 males and 71 females) after one month, and acquired coefficients was for subscales of attention deficiency 0.78, for hyperactivity 0.71 and for combined disorder 0.73. Totally results from reliability of questionnaire through two methods that mentioned above, is representative of essential stability and proper for questionnaire. This assessment carried out by teachers without refer to their names. In order to compare of frequency disorders in two genders, we used statistical method of chi-square and in order to compare of rate of disorders in different groups, we applied ANOVA in the base of level of parents' education and their families' social-economic situation (Miller,1991).

3. Findings

In total 2615 girls and boys were investigated that characteristics of their age and gender is given Table 1. As inferred from Table 2, the sample of this research includes different levels of economic-social.

### Table 1. Sample’s features in the basis of age and gender

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>Boy (n=1283)</th>
<th>Girl (n=1332)</th>
<th>Total (n=2615)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>7</td>
<td>166</td>
<td>12.9</td>
<td>134</td>
</tr>
<tr>
<td>8</td>
<td>181</td>
<td>14.1</td>
<td>306</td>
</tr>
<tr>
<td>9</td>
<td>230</td>
<td>17.9</td>
<td>293</td>
</tr>
<tr>
<td>10</td>
<td>296</td>
<td>23.0</td>
<td>266</td>
</tr>
<tr>
<td>11</td>
<td>410</td>
<td>31.9</td>
<td>333</td>
</tr>
<tr>
<td>Total</td>
<td>1283</td>
<td>./.100</td>
<td>1332</td>
</tr>
</tbody>
</table>

238 Children (/.9.1) suffering from combine disorder, 176 Children (.6.7) from attention-deficit disorder, 157 Children (.6) from hyperactivity and impulsivity disorder. The compare of frequency of prevalence of attention-deficit disorder, hyperactivity and impulsivity and combined disorder in different age groups are shown in Table 3. In 7 to 11 age groups prevalence of combine disorder was more than others, but the prevalence of attention deficit at age 9 increased and then decreased after age 9. prevalence of hyperactivity and impulsivity disorder also at age 9 increased and then decreased.

### Table 2. the Case's Social-Economic Situation

<table>
<thead>
<tr>
<th>Social-Economic Situation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>High class</td>
<td>693</td>
<td>./.26.5</td>
</tr>
<tr>
<td>medium class</td>
<td>883</td>
<td>./.33.7</td>
</tr>
<tr>
<td>Low class</td>
<td>1038</td>
<td>./.39.7</td>
</tr>
<tr>
<td>Total</td>
<td>2615</td>
<td>./.100</td>
</tr>
</tbody>
</table>

Frequency of attention deficit disorder in both boys (n=98) and girls (n=78) hadn't significant difference ($x^2=2.27$). Frequency of hyperactivity and impulsivity disorder in both boys (n=95) and girls (n=62) had significant difference ($x^2=6.93$, $p=0.008$). Frequency of combine disorder also in both boys (n=145) and girls (n=93) showed a significant difference ($x^2=11.36$, $p=0.001$). And frequency of boys suffering from this disorder is significantly more than girls. In order to compare of three groups based on family's social-economic situation and educational level of father from the view of prevalence of hyperactivity- attention deficit disorder, we used ANOVA. There was significant difference between mean of scores based on three social-economic class of families in hyperactivity and impulsivity [F (2,2612) =4.11, $p=0.0001$] and attention-deficit disorder [F(2,2612) =3.07, $p=0.003$]. In addition, mean scores of combine disorder in different economic-social classes had significant differences [F (2,2612) =3.61, $p=0.005$]. Tukey following test showed that mean scores of children belonging to low social-economic class is significantly more than mean scores of other economic-social classes from the view of rate of attention deficit, hyperactivity and combine disorders. In other words, children belonging to low social-economic class suffering from more disorder. ANOVA results showed that in respect to educational level of father there was significant difference in attention deficit disorder [F (2, 2612)= 4.88, $p=0.0001$] and combine disorder [F (2, 2612) =3.61, $p=0.002$], but in hyperactivity and impulsivity wasn't significant difference. Tukey
following test showed that also mean scores of attention deficit and combine groups in groups of father with level of under diploma education was significantly more than other groups.

### Table 3. Comparison of attention deficit, hyperactivity and impulsivity disorder with combine disorder in different age groups

<table>
<thead>
<tr>
<th>Age</th>
<th>attention deficit disorder</th>
<th>hyperactivity disorder</th>
<th>combine disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>7</td>
<td>24</td>
<td>./.8.0</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>34</td>
<td>./.6.9</td>
<td>29</td>
</tr>
<tr>
<td>9</td>
<td>44</td>
<td>./.8.4</td>
<td>37</td>
</tr>
<tr>
<td>10</td>
<td>28</td>
<td>./.4.9</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>46</td>
<td>./.6.2</td>
<td>40</td>
</tr>
</tbody>
</table>

### 4. Discussion

This study showed that the prevalence of attention deficit in different ages is from 4.9 to 8.4 percent, while the prevalence of hyperactivity and impulsivity is from 5.3 to 7 percent and combined disorder is from 6.5 to 10.3 percent, and this result is in correspondence with results of research of Byderman (2005), Faran et al (2003). Hyperactivity, impulsivity and attention deficit disorders decreased in age groups above 9 years. This decrease wasn’t observed in combined disorder and this result is in correspondence with results of research of Rara et al (2008), Barkley (2002) and Amman et al (2002) and they concluded that the number and severity of ADHD symptoms in childhood and low IQ (Peterson et al, 2001) is the strongest predictor of continuity of ADHD in adult ages. Some of the researches in the field of relation of age and hyperactivity and attention deficit disorders are not in correspondence with present research and this result of present research with some researches may be due to differences in used diagnostic criteria (DSM-III, DSM-IV), the difference in the way of acquire of information, genetic and racial differences, age differences in the study population, and even differences in feeding patterns and rate of sugar consumption in different communities. The differences in research methodology can be also another cause of these differences, because most researches in this field are longitudinal, while present research is cross-sectional. Therefore, the doing of longitudinal studies in this field also seems necessary. In relation to prevalence of ADHD among boys and girls, present study’s results show that there are significant differences between two sexes in terms of hyperactivity, and combine disorders and the prevalence of these two disorders in primary schools boys has been more than girls that is in correspondence with the results of the researches in this field. In attention to obtained results, male gender is concerned as a strong risk factor for the attention deficit/hyperactivity disorders or in other words, male gender has genetic readiness or talent in suffering to this disorder. The prevalence of attention deficit and hyperactivity disorders has been studied in the two sexes and the prevalence in girls and boys has been different. It has been reported that the relation of prevalence in boys compared with 2 to 9 times higher than girls (APA, 2000). However, this ratio has been depended on the select of studied sample from normal society or from clinical sample. higher rate of Present research’s results showed that children belonging to low social-economic class are in the risk of sufferance to ADHD that this result is in correspondence with findings of research of Traytner (1997, quoting Vahed,(2003)), Kendall (2000), Sherman et al (2008), Kabir et al (2009), which regards the social-economic class is correlated with the prevalence and severity of disorder and has reported the disorder in lower classes. This study also showed that children who their parents have diploma and under diploma educational levels are more talent to sufferance to ADHD and this result is corresponded with results of research of Barkley (1998) that has noted that parent’s low educational levels is effective factor in increasing of hyperactivity/ attention deficit disorder. Therefore, we may conclude that the prevalence of ADHD is more in families with low social-economic class and low educational level.

### 5. Conclusion

The prevalence of attention deficit, hyperactivity, impulsivity and combined disorders in primary schools children was 6 to 9.1 percent. On average two children per class was suffered to this disorder. Disorder in boys was more
common than girls and in families with a low social-economic class and low educational level was with higher intensity. Our data assert the importance of school’s position in ADHD assessment. Because many of these problems from childhood to adolescence and from adolescence to adulthood without early intervention at home and at school is transmitted, therefore, accurate information about prevalence of this disorder in both sexes, different ages and also acquisition of demographic data including social-economic status and parent’s educational level can be effective in treatment interventions.

Reference


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