



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

**DOES ATTENTION DEFICIENT AND HYPER ACTIVITY DISORDER IS A
BIOLOGICAL PHENOMENA: A CROSS SECTIONAL ANALYSIS OF CHILDREN'S
IN PESHAWAR**

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Received 25th July 2019; Revised 22nd Aug. 2019; Accepted 26th Sept. 2019; Available online 1st Jan. 2020

<https://doi.org/10.31032/IJBPAS/2020/9.1.4917>

ABSTRACT

ADHD is believed to be transmitted through hereditary process from generation to generation. Parents with ADHD often transmit the same disorder to their children. It is often believed that escalation of this disease is due to unawareness and misinterpretation of sign and symptoms. **Objective:** To find out the association between ADHD and hereditary factor through the application of chi-square test statistics. **Study Design:** A cross sectional and perceptions based endure was taken to find out association between the aforementioned variables. **Setting:** The study was conducted in Psychiatry ward of three major hospitals namely Khyber Teaching, Lady Reading and Hayatabad Medical Complex, Peshawar respectively. **Material & Methods:** A sample size of 127 patients, were randomly selected. A conceptual frame work composed of *attention deficit and hyper activity disorder among children* (dependent variable) and *hereditary factor* was taken as (independent variable). Data were gathered through a well design interview schedule while ensuring the incorporation of each aspect of the study. Further dependent variable

was cross tabulated and indexed with independent variable through the application of chi-square test χ^2 was put into exercise. **Results:** At bi-variate analysis the study found that ADHD is caused by hereditary factors in family ($p < 0.05$); patients perceive spiritual counseling to perform normally ($p < 0.05$); ADHD could be controlled when sexual intercourse is avoided till partners get rid of disorder ($p < 0.05$) and ADHD runs in families from generation to generation ($p < 0.05$) related to ADHD. **Conclusion:** parents need to be trained with coping strategies about major disorders i.e. ADHD and they should refrain from quarrelling in front of their child at home along with Intra family marriages if avoided may lead to curtailing of ADHD were put forwarded some of the recommendations in the light of present study.

Keywords: ADHD, Hereditary, Family Structure, Peshawar

INTRODUCTION

Attention Deficient Hyperactivity Disorder (ADHD) refers to a behavioral disorder which could easily be identified by an observer by tracing child who suffering from it. According to the Convention on the Rights of the Child (CRC) as whoever comes under the range of 18 years of age to be called as a child unless the state's law interprets him or her above the prescribed age range of child. ADHD is confined to children and such symptoms are prominently associated with disorder such as deficient in attention, mood swing, increase muscle-and-nerve acts and high impulsiveness. ADHD in very early age severely effects child's all aspect of life particularly cognitive, educational, emotional, social and developmental perspectives [1]. It is believed that ADHD is prevalent in general population with the range of 5% to 20% depending on the environment they are living

in. Similarly, it is prevalent among children only and their functional deficient may persist till their adulthood [2, 3].

The concept of ADHD was used by Dr. Heinrich Hoffman in 1845. He was firmly interested in elaborating the psyche of children. His prior-intent was to understand his own 3 years old son. The interesting turn came in his contribution when he collected books regarding poems pertaining with children particularly which eventually led him to do comprehensive work on the psyche problems or disorders related to children as the very area of psychiatry was untouched. This was his son whose problem turned Dr. Heinrich Hoffman to work more extensively on ADHD. Since there are thousands of scientific-based papers have been published on ADHD which have empirical understanding [4].

Likewise, from the dawn of the 20th century, the main scientific metaphor of ADHD and its symptoms are believed to be existed in children. It is believed that ADHD is confined to children only.⁴ Similarly, another study depicts that it is not necessarily accepted that those children who are intellectually sound are not vulnerable to be identified with ADHD while several studies revealed that these children with normal intellectual grasping capacity could also be caught with ADHD as in very early age it is often difficult to be diagnosed before any clinical sitting [5]. It has been noted that early age head injury could trace or lead to hyperactivity in children as severe damage to the brain which results ADHD [6].

Contemporary scenario of World Health Organization (WHO) estimated in its report that 3% to 4% of adults worldwide have ADHD, out of which 4.5% in the United State only. All of those who are caught by this psychiatric disorder, among them a large proportion of patients, almost 8 million to 10 million are not going through any clinical sitting or testing for systematic diagnosis. Very sadly round about millions of ADHD patients did not seek any quality of treatment due to their ignorance or low level of awareness in initial phase of occurrence of the very disorder [7]. The WHO study also

reported that large portion of adults with ADHD are usually absent from organization where they serve their respective duties. The Centers for Disease Control and Prevention reported in 2009 that their absence from workplace leads to break the plane environment or cycle of profits although in a result organization face losses about \$ 3.7 billion [8].

The commonness of ADHD has been noticed in Pakistan about 2.49% [9]. Boys has significantly higher ratio with ADHD than girls, but ratio varies remarkably from 2:1 to 9:1. Gender difference is less distinct and prominent for being not attentive type of ADHD. Boys are more exposed to hostile and antagonistic behavioral problems [10]. Children with ADHD contribute 30-40% of consultation to child mental health physicians [11].

The scarcity of child psychiatrics in Pakistan is becoming one of the major causes of many cases of ADHD remain undiagnosed. Child psychiatry in Pakistan still in continuous striving, although Pakistani population is remarkably attained knowledge of psychiatry but it is still at very lower degree of awareness in contrast to western world [12]. Genetic factors have often been probably involved in causing ADHD. The disorder is not confined to genetic transmission only

while there is number of factors responsible for ADHD etiology. Amongst all factors heritability is considered as a major and prevalent which is estimated 76% [13].

It is believed that children born to parents who themselves suffer from ADHD, there is probability that they are too identified with the same disorder. Amongst all other key factors of ADHD, hereditary is one of the chief leading influential elements [14]. It does not merely mean that every child born to infected parent with the former disorder will have the same disease while there is higher chances as researchers i.e. notably medical science researchers assess that about 1 in 3 children [15]. It is also heard that having a family member with ADHD make other family members more likely to be caught with the same disorder. Indeed, according to the National Institute of Health (NIH) reveals, at least one third of parents who have or had ADHD will more likely to have their children diagnosed with ADHD whether at the time of birth or later. It depends on the situation how one takes himself or she to clinical setting to be

diagnosed and it becomes difficult to identify newly born baby with ADHD [16]. In the light of above existing stock of literature this study is formulated to determine the hereditary factors responsible to cause ADHD in Peshawar.

MATERIALS AND METHODS

A cross sectional study design was conducted in three major hospitals in district Peshawar namely-Lady Reading, Khyber Teaching and Hayatabad Medical Complex. ADHA patients at psychiatric wards of the aforementioned hospitals were the key respondents of the study. The overall population of ADHD patients at aforementioned three hospitals was 185 resulting a sample size as per [16] criteria as 127. Further, by adopting direct and face to face interaction a well structured questionnaire was used. The sample size was further proportionally assigned to each single unit (hospital) by adopting proportion allocation method as given below; the formula of proportional allocation method is given below;

$$n_i = \left(\frac{N_i}{N}\right) \times n \text{ (Chaudry, 1996).}$$

$$n_i = \left(\frac{N_i}{N}\right) \times n$$

n = total sample size required.
N = Total population in study area.
N_i = Total population in each hospital.
n_i = Sample size required for each hospital.

Table 1: Proportional allocation of sample size as per hospitals

S. No	Name of the Hospital	Population Size (Patients) {N}	Sample Size (n)
1	Lady Reading Hospital	46	31
2	Khyber Teaching Hospital	74	51
3	Hayatabad Medical Complex	65	45
GRAND TOTAL		185	127

Source: Lady Reading Hospital (LRH), Medical Ward, Khyber Teaching Hospital (KTH), and Hayatabad Medical Complex (HMC) Peshawar

Furthermore, Chi-Square test (χ^2) was carried out while adopting the procedure outlined:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}}$$

RESULTS AND DISCUSSIONS

Frequency and Percentage distribution on the basis of Hereditary Factor

Table 2 showed that majority 79.5% of the respondents urged that ADHD is caused by hereditary factors in their family. These finding are supported by the notion of Timothy. 16 In addition, majority 80.3% of the respondents claimed that ADHD is transmitted from generation to generation and hereditary is the principal cause of the very disorder. These findings of the study are supported by the views of Biederman [15]. Moreover, having 70.1% of the respondents dismantled that parents with psychological disorder is more prone to reproduce mentally impaired offspring [17]. Similarly, majority 79.5% of the respondents urged that ADHD runs in families from generation to generation. These finding are in lines with Bhandari [18]. A leading majority 59.8% of the respondents affirmed that by avoiding

sexual intercourse between spouses in case of one partner with ADHD is the way to prevent the occurrence of aforementioned disorder in their offspring. These findings are supported by the notion of Baria [17]. Likewise, majority 61.4% of the respondents approved that people consider the hereditary attachment as ill-being taken as social stigma. These findings showed consonance with the views of Anna *et al.*, [19].

However, majority 80.3% of the respondents uttered that ADHD is primarily result of intra-family marriages. Endogamy in persistence practices may lead to some physical and mental complications especially for children and new born babies [20]. Furthermore, 80.3% of the respondents viewed that patients with hereditary disorder are subjected to isolation in case of marriage. These statements as narrated as proceeding [20]. Similarly, majority 80.3% of the respondents were of the view that social dynamics are congenial to ADHD patients. Likewise, 69.3% of the respondents believed that they perceived spiritual counseling to perform normally. Practice of healing and prevalence for curtailment of disorder

through the domain of spirituality is not yet ruled out in south Asian countries. Pakistan, being a south Asian state having deeply impressed in cultural and religious explanation is the true area of mistreatment of physiological disorder (**Table 2**). These findings are supported by Tohid & Ashraf [12].

Association between Hereditary Factor and Attention Deficient Hyperactivity Disorder (ADHD)

ADHD is believed to be transmitted through hereditary process from generations to generations. Parents with ADHD often cause the same disorder to their children. Information pertaining to association between hereditary factor and ADHD is reproduced in **Table 3** below:

Table 3 depicts a highly significant ($P=0.000$) association was found between ADHD and ADHD is caused by hereditary in patients' family. Similarly, a significant ($P=0.049$) association was found between ADHD and hereditary is the main reason behind transmission of the very disorder from parents to their children. It could be attributed to the case during the treatment. There were later on acknowledging any a patients and doctors through the process of awareness. These finding were in time to the assumption of *Timothy* [16] who disclosed

that one third of parents who have or had ADHD will more likely to have their children diagnosed with ADHD whether at the time of birth or later [16]. Moreover, a significant ($P=0.045$) association was found between ADHD and parents with psychological disorder are more prone to reproduce mentally defective offspring's. Based on the above findings, as ADHD though a physiological disorder, however highly embedded and transmission into younger kids of those whose parents are suffering from ADHD. These findings were harmoniousness with the views of Baria [17] disclosed that, parents with psychological disorders are more likely to have mentally defected children with different disorders notably ADHD [16].

In addition, a significant ($P=0.043$) association existed between ADHD and it runs in families from generation to generation. These finding are synonymous to the proceeding conclusion and pointed out by Bhandari [18] who articulates that ADHD descends in families from generation to generation. There are found some hereditary distinguishable features that seem to be qualified and recommended [18]. It was also emanated from the study that a significant ($P=0.008$) association was found between ADHD and it could be controlled when

sexual intercourse is avoided till partners get rid of disorder. It is obvious that ADHD is curable. Proper treatment prior to sexual intercourse may avert the occurrence proceeding ADHD patents in the form of reproducing. These findings are supported by the notion of Baria [17] who proclaimed that avoiding sexual contact by partners till get rid of any psychological disorder is the way to reproduce healthy children with sound health [17].

Likewise a significant ($P=0.011$) association was in existence between ADHD and people consider the hereditary attachment as ill-being taken as social stigma. Stigmatization is a reality in prevalence in each another of the societies. Anything beyond the imagination and control of human beings as illusionary. These findings were in consonance with the views of Anna *et al*, [19] who affirmed that ADHD has no concern with the association of hereditary factor while it's a mere illusion of society. However a non-significant ($P=0.170$) association was found between ADHD and hereditary disorder is the main cause of intra family marriages. It is obvious that hereditary translation could not be the single cause of ADHD rather some other sociological and personality is not to be ruled out as concern to it. These findings of the study are

supported by the work of Faraone *et al.*, [20] who emphasized ADHD is understood to be highly inheritable among those who preferred to follow endogamous practices of marriages as compared to other key causative agents of the disorder. 20 Contrary to the above, a significant ($P=0.049$) association was found between ADHD and patients with hereditary disorder are subjected to isolation in case of marriage. Social isolation is yet an obvious reason of personality disorder. This disorder lead to a personality in total isolation, he is suffered from ADHD. These findings are further supported by Faraone *et al*, [20] who expressed their views that it has been noticed that ADHD patients are often endangered to isolation [20].

Furthermore, a highly significant ($P=0.000$) association was found between ADHD and social dynamics are congenial to ADHD patients. Similarly, significant ($P=0.006$) association was found between ADHD and patients perceive any sort of spiritual counseling to perform normally. ADHD, though a physiological disorder however, it is usually misunderstood and misconceived to be a reason, highly indebted in spiritually as pointed out by Tohid & Ashraf [12] that it has been noticed that nowadays parents take their children to psychiatric clinic rather than bring them to "Aami or Damgar".. However, in South East Asians countries it is a persistent obstacle in providing care to patients coming to the psychiatric ward [12].

Table 2: Frequency and Percentage distribution on the basis of hereditary factor

S.No	Attributes	Yes	No	Uncertain
1	ADHD is caused by hereditary in your family	101(79.5)	0(00.0)	26(20.5)
2	Hereditary is the main route of transmission of ADHD	102(80.3)	25(19.7)	0(00.0)
3	Parents with psychological disorder are more prone to reproduce mentally defect offspring	89(70.1)	25(19.7)	13(10.2)
4	ADHD runs in families from generation to generation	101(79.5)	26(20.5)	0(00.0)
5	ADHD could be controlled when sexual intercourse is avoided till partners get rid of disorder	76(59.8)	25(19.7)	26(20.5)
6	People consider the hereditary attachment as ill-being taken as social stigma	78(61.4)	13(10.2)	36(28.3)
7	Hereditary disorder is the main cause of intra family marriages	102(80.3)	13(10.2)	12(9.4)
8	Patients with hereditary disorder are subjected to isolation in case of marriage	102(80.3)	25(19.7)	0(00.0)
9	Do you think social dynamics are congenial to ADHD patients	102(80.3)	25(19.7)	0(00.0)
10	Do you perceive any sort of spiritual counseling to perform normally	88(69.3)	39(30.7)	0(00.0)

*Values in the table represent frequencies while values in the parentheses present percentage

Table 3: Association between Hereditary Factor and Attention Deficient Hyperactivity Disorder (ADHD)

Hereditary Factor	Perception	Attention Deficient Hyperactivity Disorder (ADHD)			Total	Chi-Square (P-Value)
		Yes	No	Uncertain		
ADHD is caused by hereditary in your family	Yes	101(100.0)	00(00.0)	00(00.0)	101(100.0)	$\chi^2=56.259$ (P=0.000)
	No	00(00.0)	00(00.0)	00(00.0)	00(00.0)	
	Uncertain	13(50.0)	13(50.0)	00(00.0)	26(100.0)	
Hereditary is the main route of transmission of ADHD	Yes	89(87.3)	13(12.7)	00(00.0)	102(100.0)	$\chi^2=3.550$ (P=0.049)
	No	25(100.0)	00(00.0)	00(00.0)	25(100.0)	
	Uncertain	00(00.0)	00(00.0)	00(00.0)	00(00.0)	
Parents with psychological disorder are more prone to reproduce mentally defect offspring	Yes	76(85.4)	13(14.6)	00(00.0)	89(100.0)	$\chi^2=6.184$ (P=0.045)
	No	25(100.0)	00(00.0)	00(00.0)	25(100.0)	
	Uncertain	13(100.0)	00(00.0)	00(00.0)	13(100.0)	
ADHD runs in families from generation to generation	Yes	88(87.1)	13(12.9)	00(00.0)	101(100.0)	$\chi^2=3.728$ (P=0.043)
	No	26(100.0)	00(00.0)	00(00.0)	26(100.0)	
	Uncertain	00(00.0)	00(00.0)	00(00.0)	00(00.0)	
ADHD could be controlled when sexual intercourse is avoided till partners get rid of disorder	Yes	63(82.9)	13(17.1)	00(00.0)	76(100.0)	$\chi^2=9.718$ (P=0.008)
	No	25(100.0)	00(00.0)	00(00.0)	25(100.0)	
	Uncertain	26(100.0)	00(00.0)	00(00.0)	26(100.0)	
People consider the hereditary attachment as ill-being taken as social stigma	Yes	65(83.3)	13(16.7)	00(00.0)	78(100.0)	$\chi^2=9.098$ (P=0.011)
	No	13(100.0)	00(00.0)	00(00.0)	13(100.0)	
	Uncertain	36(100.0)	00(00.0)	00(00.0)	36(100.0)	
Hereditary disorder is the main cause of intra family marriages	Yes	89(87.3)	13(12.7)	00(00.0)	102(100.0)	$\chi^2=3.550$ (P=0.170)
	No	13(100.0)	00(00.0)	00(00.0)	13(100.0)	
	Uncertain	12(100.0)	00(00.0)	00(00.0)	12(100.0)	
Patients with hereditary disorder are subjected to isolation in case of marriage	Yes	89(87.3)	13(12.7)	00(00.0)	102(100.0)	$\chi^2=3.550$ (P=0.049)
	No	25(100.0)	00(00.0)	00(00.0)	25(100.0)	
	Uncertain	00(00.0)	00(00.0)	00(00.0)	(100.0)	
Do you think social dynamics are congenial to ADHD patients	Yes	102(100.0)	00(00.0)	00(00.0)	102(100.0)	$\chi^2=127.000$ (P=0.000)
	No	12(100.0)	00(00.0)	00(00.0)	12(100.0)	
	Uncertain	00(00.0)	13(100.0)	00(00.0)	13(100.0)	
Do you perceive any sort of spiritual counseling to perform normally	Yes	39(100.0)	00(00.0)	00(00.0)	39(100.0)	$\chi^2=6.418$ (P=0.006)
	No	75(85.2)	13(14.8)	00(00.0)	88(100.0)	
	Uncertain	00(00.0)	00(00.0)	00(00.0)	00(00.0)	

*Number in table represent frequencies and number in parenthesis represent percentage proportion of respondents and in the last columns number in the parenthesis represent P-Value

CONCLUSIONS AND RECOMMENDATIONS

The present study was carried out in psychiatry ward, Khyber teaching hospital, Lady reading hospital and Hayatabad medical complex Peshawar with the sole purpose to assess the hereditary factors of ADHD. It was concluded from the study that many of the respondents had complaint of ADHD as a hereditary factor. Parents with mental disorder were more prone to reproduce mentally defected or retarded offspring's like ADHD. Hereditary was seen as the outcome of intra family marriages among close kin. The study concluded that parents need to be trained with coping strategies about major disorders i.e. ADHD and they should refrain from quarrelling front of their child at home along with Intra family marriages if avoided may lead to curtailing of ADHD were put forwarded some of the recommendations in the light of present study.

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