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THE ASSOCIATION BETWEEN HYPERACTIVITY/ ATTENTION-DEFICIT DISORDER AND TRAUMA IN ADOLESCENTS

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Abstract:
Objective: *Attention-deficit/hyperactivity disorder (ADHD) is characterized by persistent and impairing levels of inattention, impulsivity and hyperactivity. Evidence shows that adolescents with ADHD are more exposed to trauma. This study aimed to investigate the relationship between ADHD symptom severity and trauma severity.*
Methods: In this descriptive correlational study, the study population included traumatic adolescents aged 12-18 years referred to DHQ Hospital, Sahiwal for one-year duration from May 2019 to May 2020. Among this population, 91 subjects were selected. In order to exclude subjects with other psychiatric disorders, a psychiatrist performed clinical interviews with them. In this regard, the short form of Conner's Comprehensive Behavior Rating Scales Revised Edition (CBRS-R) and Pediatric Trauma Scale were used. For data analysis, Pearson correlation coefficient and independent t test were applied. Data were analyzed using SPSS software version 22.
Results: *There was a significant positive relationship between trauma severity and ADHD score, hyperactivity, and oppositional/Impulsivity (P less than 0.01). Conversely, no statistical significance was observed between attention deficiency and trauma severity. The severity of trauma was higher among ADHD group than normal individuals. There were also correlations between socioeconomic status (SES) and oppositional/impulsive patients. In this regard, higher scores of oppositional/impulsivities were observed among patients with lower SES.*
Conclusion: *Traumas have significant effects on economic and humanistic aspects of life in modern era. Our findings showed that there was a statistically significant relationship between hyperactivity-inattention and trauma intensity in adolescents. Therefore, to prevent traumatic events, ADHD screening at schools is suggested. By the same token, informing parents through mass media can help reduce the consequences of inattention/ hyperactivity disorder in the society.*
Keywords: *Hyperactivity, Trauma severity, Attention deficit, Impulsivity, ADHD*

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INTRODUCTION:

Attention deficit hyperactivity disorder (ADHD) is one of the most common diseases that occur primarily with symptoms such as carelessness, hyperactivity, impulsive behavior or a combination of these symptoms in school years. It can affect cognitive abilities and psychosocial functions. Not only can it have some impact on the lives of children and young people, but it can also affect the quality of life of the family. The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) determines this disorder according to two ways of symptoms: 1) the appearance of attention deficit and 2) hyperactivity and impulsivity. Therefore, it is necessary for young people to check these symptoms, as they can cause some problems in schools or social places for them. In addition, DSM5 offers three subcategories (presentations) of ADHD: (a) intent, (b) hyperactive/impulsive and (c) combined. Children with ADHD may experience significant adaptation problems due to expected levels of development or growth from chronological age. In 60% of cases, symptoms persist until adulthood, and most cases are associated with other mental disorders such as depression, anxiety, obsession, learning difficulties, bipolar disorder. In some studies, underlying emotional problems such as educational failure and anxiety and depression have been reported in adolescents with ADHD. Evidence suggests that children and adolescents with ADHD are more likely to suffer injuries. Therefore, without therapeutic intervention, this disorder can cause car accidents and head trauma. Other studies have shown that this disorder increases the risk of accidents and injuries for teenage pedestrians. Poor attention skills and high impulsivity can be the primary causes of such injuries, as they pass through the streets. Many studies have been conducted worldwide on children and adolescents with ADHD and trauma. Around 18,000 people die each year in the UK from accidents, more than half of whom are teenagers and teenagers under the age of 30, and this research shows that the most traumatic cases are men, young people and young people. In developing countries in particular, the main causes of post-traumatic illness for young people are workplace accidents caused by low levels of safety and road accidents in such places.

Today, around 50% of injuries worldwide are car and road accidents. In addition, according to the World Health Organization (WHO), the lack of attention to this important issue will increase this number to 60 by 2020. Three of the world's leading causes of death are cardiovascular disease, cancer and injuries. Trauma is the second most common cause of death in Pakistan. Impulsiveness, carelessness and administrative dysfunction are factors that lead teenagers with ADHD to dangerous behaviors that can cause injury. In addition, research shows that people with ADHD have more tendency to engage in dangerous behavior compared to their peers. Due to the fact that there is no evidence in this area and prioritize the Pakistani health care system in preventing morbidity and mortality caused by injuries and road accidents, we decided to conduct a study to investigate the relationship between hyperactivity/deficiency and trauma among teenagers admitted to ER department. Our goal was to know if ADHD symptoms were associated with worsening trauma in adolescents.

METHODS:

This prospective was held in the DHQ Hospital, Sahiwal for one-year duration from May 2019 to May 2020. We conducted a pilot study of 30 samples to determine the sample size. After measuring the correlation between the variables, the final sample size 91 was reached at 0.05, which represented 80% of the power. Topics selected using the convenience sampling technique. The inclusion criteria included 6- to 12-year-olds who were hospitalized for injuries caused by falls, bicycles, motorcycles and accidents involving pedestrians. Reluctant to participate in exclusion criteria, serious mental disorders during an accident (e.g. psychosis), medical disorders causing opacity of consciousness during an accident (e.g. convulsions), the indirect role of a teenager in the creation of trauma (e.g. car accidents or brawls caused by others), less than IQ 75 (Raven's Progressive Color Matrix), a history of the use of anti-urgent drugs and a brain effect with brain effect. For other psychiatric disorders, participants were clinically interviewed.

The survey contains 27 items with four sub-sub-sub-reports filled by parents. Opposition, cognitive problems/carelessness, hyperactivity and ADHD index. The standard score is equal to or greater than 59 and exhibits significant clinical problems on this subscale. In the range of 0.75-0.90, the reliability of the internal coefficient was reported.

Evidence suggests that the Pediatric Trauma Scale (PTS) is an important tool for predicting post-traumatic injuries that cause death. In this exam, scores above 8 reveal a likely death of 9%, and results below zero or equal to zero explain the probability of death by 100%. There is a linear relationship between low PTS scores and the probability of death. The lowest score in the poll is 6 and the highest score is 12. The severity of the injury shows 7-11 minor or minor injuries, 1-6 indicates moderate injury, and -6 indicates serious and serious injuries.

Pearson's correlation coefficient and independent t-test were used for data analysis using 20 versions of SPSS software.

RESULTS:

Of the 91 subjects involved in this study, 13 were women (8 in the ADHD group, 5 were in the normal group) and 78 were male (35 in the ADHD group, 43 in the normal group). The mean age of the subjects was 12.90-2.22 years (13.14 for the normal group and 12.62-2.29 for the ADHD group). The average age of parents was 41.09-5.8 years.

Table 1. Demographic information of participants and their parents in this study

	ADHD group	Normal group	All
Adolescents sex			
Female, No. %	8 (18.6)	5 (10.4)	13 (14.3)
Male, No. %	35 (81.4)	43 (89.6)	78 (85.7)
Average age of adolescents	12.62±2.29	13.14±2.15	12.90±2.22
Parents sex			
Female, No. %	22 (51.2)	14 (29.2)	36 (39.6)
Male, No. %	21 (48.8)	34 (70.8)	55 (60.4)
Average age of parents	40.44±6.23	41.67±5.45	41.09±5.8

In Table 2, standard mean deviation, highest and lowest variable results are represented in two different ADHD and normal groups.

As shown in Table 3, 36 teenagers identified with ADHD. Tables 4 and 5 show the frequency and severity of ADHD subtypes and injury types in ADHD patients compared to young people without ADHD.

Table 2. Descriptive index of variables studied in differentiated groups

	Indexes	Average	Standard deviation	The lowest	The highest	Number
ADHD group	ADHD	58.2	9.05	38	76	43
	Hyperactivity	54	13.5	33	83	43
	Attention deficit	54	13.19	37	87	43
	Oppositional/ impulsive	54	8.5	40	77	43
	Trauma severity	10.58	0.88	8	11	43
Normal group	ADHD	44.25	6.62	32	57	48
	Hyperactivity	41.47	5.12	33	53	48
	Attention deficit	44.33	7.88	33	57	48
	Oppositional/ impulsivity	40.04	5.91	33	59	48
	Trauma severity	9.89	0.57	9	11	48

Table 3. Types of trauma frequency in different groups

Types of trauma	ADHD group	Normal group	All
Laceration	16 (38.1%)	20 (40.8%)	36
Closed Fracture	22 (52.4%)	19 (38.8%)	41
Open Fracture	4 (9.5%)	10 (20.4%)	14

Table 4. ADHD subtypes and severity in adolescents with ADHD

ADHD subtypes	No. %	ADHD Severity	No. %
Inattentive Type	12 (28.6%)	Mild	32 (76.2%)
Hyperactive/impulsive type	9 (21.4%)	Severe	8 (19%)
Combined type	21 (50%)	Very severe	2 (4.8%)

Table 5. Trauma frequency in three types of ADHD

Trauma type	Inattentive type	Hyperactivity/impulsivity type	Combined type
Laceration, No. (%)	2 (22.2)	3 (25)	10 (47.6)
Closed fracture, No. (%)	7 (77.8)	6 (50)	9 (42.9)
Open fracture, No. (%)	-	3 (25)	2 (9.5)

There was a significant negative correlation between the opposition/abhorrent components of ADHD and social and economic situations (Table 6). The correlation matrix between ADHD score, hyperactivity, opposition/impulsivity, attention deficit and variable injury severity resulted in opposition/impulsive results, hyperactivity and ADHD, such as 0.50, 0.62 and 0.61, respectively. According to the results, there was a significant positive link between injury severity and ADHD, hyperactivity and opposition/impulsive (P 0.01).

Table 6. Correlation matrix between trauma severity, ADHD, attention deficit, hyperactivity, and oppositional/impulsive components with economic and social situations

	ADHD	Attention deficit	Hyperactivity	Oppositional / impulsive	Trauma severity
Socio economic status	-0.38	0.08	-0.13	- 0.25*	-0.16

The results of the independent t-test showed that the severity of the injury in non-ADHD adolescents is different (P - 0.001, df - 89, t - 4.98) and table 2 trauma in the ADHD group is higher than normal patients.

DISCUSSION:

One of the most common behavioral disorders in childhood and adolescence is ADHD. This disorder affects about 3-5% of children and adolescents in school years. This study investigated the relationship between worsening of hyperactivity/carelessness symptoms and worsening of injuries in adolescents. The results of the study showed that of the 91 teens in the study, 13 were female and 78 were male. This compound is parallel to the work of Amiri et al, Abolhassanzadeh et ark, Bener et al and Mugnaini et al, as well as other studies on ADHD prevalence in the higher incidence of ADHD in women in men. Evidence suggests that the incidence of negligent/hyperactivity disorder in men is higher than in women. It should be noted that the diagnosis of hyperactivity in men is faster and easier than in women. These ADHD symptoms are more important in men, and men also exhibit more impulsive behavior than women. Therefore, this disorder can be diagnosed more quickly in men. In general, there are some signs of this disorder in women with ADHD in ignorance of carelessness and problems around it, instead of expecting impulsive behavior in men. Our findings show that 46, 31 and 14 people took part in this study, which was poor in economic and social status. This is consistent with the findings of Esfandabadi et al, which is more common in children with parents who are illiterate or graduate from elementary ADHD schools. On the other hand, this ratio is the least common percentage of parents with secondary education or diplomas. Higher education of parents contributed to low adhd rates.

Of the 42 hyperactive adolescents, 50% suffered from combined ADHD, 28.6% suffered from careless hyperactivity and 21.4% suffered from impulsive hyperactivity. This finding is consistent with the result obtained by Alishahi et al, Shahim et al. In contrast, they found the most commonly impulsive/hyperactive subtype of ADHD inconsistent with the result of Abolhassanzadeh et al. This discovery is mainly associated with environmental, social and cultural factors. Parents of hyperactive children are often prone to symptoms with a lack of attention according to symptoms of impulsivity. Therefore, after a stroke of these symptoms, look at the centers of treatment. In this sense, combined and in-care types are more common than impulsive type in clinical settings.

Another finding from the study suggests that the severity of the injury was mild in all participants. In addition, the results showed a significant positive correlation between injury severity and ADHD score, hyperactivity, and opposition/impulsivity results (P <0.01).

Patients with adolescence and adult hyperactivity are mostly car accident injuries in the use of the arm, so adults with severe trauma should be evaluated by a psychiatrist to have ADHD.

However, this study found no statistically significant link between the result of carelessness and the severity of the injury because the hyperactive features of ADHD were impulsive in the wrong place, raising the wall and anxieties. Such symptoms can be found to be very related to the likelihood of injury and trauma in children and adolescents, while careless ADHD function is associated with cognitive deficit rather than trauma or injury, possibly due to lack of attention and lack of trauma. Results also showed that the severity of trauma in young people with ADHD and non-ADHD is different and is greater in the ADHD group than in the control group. In addition, patients with low socio-economic status experienced a failure at different stages of treatment. In addition, when analyzing indicators between socio-economic status and physical illnesses, they found that family welfare and income are among the indicators of permanent socio-economic status and are more important in women than in men and young people than in older people. An analysis of risk factors for physical illnesses and injuries, such as trauma, indicates that educational attainment is significantly related to risk factors for physical injury and has a healthy lifestyle, but this is less likely for people with lower education than high school graduation.

Without further research, the impact of parental demographics on teenage mental disorders cannot be taken into account.

It is possible to achieve a different result using other research methods and the use of other research tools, such as interviews or observations, to determine the full impact of factors such as parental age, working in mothers and socio-economic class.

Another method used in this study may be causing inconsistent results from our studies. Some studies have shown that people with ADHD have a greater interest in high-risk behavior than their peers. In addition, some studies have shown that this disorder increases the risk of injuries and accidents involving pedestrians in adolescents. Careful skills and high impulsivity can increase the risk of damage through the street. Fischer et al studied the behaviors and consequences of driving for hyperactive children during adolescence and childhood. The results showed a significant difference between those who have a control group in road accidents. However, a study of 70 people with repeated trauma experience by Amiri and ark. and 70 patients with musculoskeletal trauma due to road accidents found no link between ADHD in adulthood and injuries caused by road accidents.

CONCLUSION:

Results showed a statistically positive relationship between injury severity and ADHD, hyperactivity and opposition/impulsivity. However, there was no statistically significant link between attention deficit and severity of injury. In addition, results have shown that the severity of injuries in young people with ADHD and without ADHD is different. In the ADHD group, the severity was higher than in normal people. In addition, there was a significant negative correlation between the components of ADHD and socio-economic conditions and opposition/impulsivity.

Given the profound impact of trauma on human and financial resources and the high rate of accidents in children, policy makers must plan coherent screening, education and prevention programmes. In addition, care should be taken to prevent further problems for children.

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