

Investigation of the attention deficit-hyper activity disorder (ADHD) consequences in children and its usual treatments

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abstract

attention deficit-hyper activity disorder is accompanied with a lot of problems in many instruction field such as poor educational function, flunk, leaving school, poor friendship and family communication, anxiety and depression. The children who are affected to this disorder are exposed to many kind of harm such as aggression, behavioral disorders, stubbornness, disobedience ,offense, drug abuse in low age ,low breaking and also they are exposed in the danger of comorbidity of this disorder with other mental disorders. Attention deficit-hyper activity disorder has a wide affect on the life of thousands children and their family. So for decrease the mentioned problems, early intervention is necessary at school and home environment. Because without attention to early intervention at school and home, many of these problems are delivered to adolescent period . lack of diagnosis and on time treatment of this disorder could create serious cognition problems in the life of these patients. Exact information about the prevalence of this disorder in both sex , different ages, and also their social and

economical fields could be useful in treatment interactions.

Key words: attention deficit-hyper activity disorder, ADHD, children, consequence, treatment

Attention deficit-hyper activity disorder (ADHD), is diagnosed by unstable, inefficient, and inappropriate with age and as a deficit- compulsive or hyper activity model. And it is the most familiar developmental-neurological disorder. The prevalence rate of this disorder in the world pre-school children is estimated about 5% [1]. In international classification of disease , 10th edition (ICD 10), hyperkinetic disorder (HKD) is a more accurate diagnostic category and the presence of inattention signs and also hyperactivity signs are necessary with each other [2].

Inattention-hyperactivity disorder is usually accompanied with other disorders such as oppositional defiant disorder (ODD), conduct disorder (CD), and anxiety disorders [3]. Also this disorder is comorbid with depression and other mood disorders, personality disorders, substance abuse disorder, sleep disorders and learning disability [4].

Attention deficit-hyperactivity disorder is one of the most familiar disorder in adults and children, and most of the time in 2-4% of times continued until adulthood . Probably boys three times more than daughters are affected to inattention-hyper activity disorder

and for this disorder more referred to counsellor [5]. Findings show that the signs of inattention-hyper activity disorder is different in children, adolescents and adults. With increase of age inattention deficit will remain stable but the rate of hyperactivity is decreased with increasing of age [6]. Attention deficit-hyperactivity disorder is highly inherited so the parents of the children with this disorder may show the inattention-hyperactivity symptom [7]. Diagnostic of inattention –hyper activity disorder in 12-16 years old children is depend to the execution of a collection of higher level cognitive functions, that is classified as executive functions and it requires inhibition of response, programming, mind function, being up to date and change of tasks [8].

In American united states from 2003 to 2011 the prevalence rate of inattention -hyper activity disorder between 7-11 years old children is increased from 7.8% to 11% [9]. According to the statistics of us centre for disease control and prevention (CDC) , in America 7.8 of 7-18 years old children are affected to inattention-hyperactivity disorder [10]. The other studies show that the prevalence rate of inattention-hyperactivity disorder is varied among the children of world about 5% and among adults between 2.5 to 4.9 [11].

There are three kinds of inattention – hyperactivity disorder. And these three kind are consist of : often inattention, often impulsive- hyperactive, and the third kind is composite type that it has both inattention deficit and hyperactivities symptoms.

The consequences of infection to inattention-hyperactivity disorder in children

The danger of creation unintentional physical injuries :

for the main symptoms and related condition with it the inattention-hyperactivity disorder put a heavy burden on the individuals

affected to this disorder, their families [12], and also society [13].

The factor that may be related to the social consequences of inattention-hyperactivity disorder is the probability of relation of this disorder with increased risk of unintentional physical injuries (UPIs) , that may be the reason of increased mortality in this disorder. Also the main symptoms of inattention-hyperactivity disorder (inattention, hyperactivity and impulsivity) and also the characteristic related to comorbid disorders with it (like the impulsivity related to oppositional defiant disorder and behavioural disorder) may increase the dangerous of unintentional physical injuries [14].

unintentional physical injuries in childhood is the main reason of death and handicap in children and adults. In a year more than 500000 children loosing their lives in all over the world because of unintentional physical injuries and many of them become handicapped permanently [15]. Of course these injuries more related to the childhood. More over physical weakness, smaller size, incomplete growth of mind will lead to more sever injuries and defects [16]. The danger of physical injuries are varied with attention to sexuality, and in male is more than female. According to the report of world health organization in 2008 about the prevention of childhood injuries , death danger by unintentional injuries is very high among the 15 years old and below one years old children in countries with high income (28 death than every 100000 death). Also the social-cultural poverty is one of the other factors related to unintentional physical injuries [17].

Disruption of parent-child relationship:

in the families with inattention-hyper activity disorder child, the parent-child relationship is severely damaged [18]. First of all for the behaviour of inattention-hyperactivity child, the parents are less patient and more attention to the disruptive behaviour of child and more behave compulsively and it is called parental

hyperactivity and it is predictor of child behaviour manifestation [19].

Second, it is possible the parents of inattention-hyperactivity disorder children have similar problems of their child because this disorder is strongly influenced by heredity [7]. Third the parent reaction to the behaviour of child automatically and on the basis of their childhood experience and also on the basis of their judgement of child wrong behaviour [20]. Fourth parental stress is increased in parents with inattention-hyperactivity disorder children [18]. And perhaps in effect of stress they change to rejected, controlling, and reactive parent toward their child`s behaviour [21].

Recent investigations show that in the high school students with inattention-hyper activity disorder, even if the other conditions be suitable there are more possibility to read a coarse twice. And this only indicator of the importance of early diagnostic of this disorder to prevent of unsuitable results during learning [22]. Many investigations show that high percent of children with inattention-hyper activity disorder have weak educational function which is affected their educational achievements and their academic functions and this situation is continued until adolescents period. And also the children who are affected to this disorder need to psycho educational cares 2-5 times more than the children who are not affected to this disorder [23]. About 70% of this children need to special education and it is become a challenge for parents, teacher and school consulting services [24]. Cooperation of parents with education specialist is very effective in improvement of the children with this disorder. In fact some of the parents cooperation models at school is indicator of 3 important points: first the contact of teacher and parents make easier the control of improvement rate at school and also doing homework. Second it causes parent cooperation in school activities, and the third point is that direct cooperation of parents and children caused mental stimulation of child

and as a result it lead to educational success [25]. The results of some researches show that the parents of the children who are affected to inattention-hyperactivity disorder ,unlike families whose children did not have this disorder have less cooperation in their children education. This group of parents declare that although they have enough awareness than the growth of children abilities , they feel that have less acquirement for helping to their children for satisfaction of their instructional needs [26]. In fact several problems of children with inattention-hyperactivity disorder affected the teachers so far that these education specialists report more stress in their behaviour [27].

substance use disorder:

one of the problems that it can be comorbid with inattention-hyper activity disorder is substance use disorder (SUD). In an study two groups were compared with each other, the first group were only consist of the individuals with inattention-hyperactivity disorder, and the second group were consist of the individuals with inattention-hyperactivity disorder and substance use disorder. This study demonstrated that the second group showed the higher rate of oppositional defiant disorder ,conduct disorder, inappropriate mood characteristics (stubbornness, bad temper, compulsive behaviour), incompatible behaviour at school, the record of substance use disorder in the family, and the symptoms of inattention-hyperactivity disorder in childhood [28]. The meta analysis that is studied the pharmacotherapy of inattention-hyperactivity disorder with stimulants and investigated the effect of it on the increase dependent on nicotine [29] , resulted that there is very important connection between studied the pharmacotherapy of inattention-hyperactivity disorder with stimulants and the decrease of cigarette use rate in these patients. Also the study that is done recently in Europe show that the treatment of inattention-hyperactivity with stimulants is decreased the risk of substance use disorder

in adolescents with this disorder, specially if the treatment with stimulants is started than low age [30].

Eating disorders:

a comprehensive study is investigated the four expressed view points about the relation of inattention –hyper activity disorder and eating disorders (EDs) [31]. Eating disorder can extremely affected the physical and mental health of the individual , so the investigation of eating disorder behaviour can be really effective in control and management of inattention-hyperactivity disorder [32]. Perhaps the individuals with inattention-hyperactivity disorder have normal weight, but they suffer from anorexia nervosa also perhaps the hyperactivity symptoms prevent than over weight in this individuals and cause the underestimation of problematic eating behaviours that is comorbid with this disorder. Although the symptoms of inattention-hyperactivity disorder has different demonstration in different ages , the hyperactivity symptoms is decreased gradually and is stabled [33].

Problem in communication with others: children with inattention-hyperactivity disorder experience some problems in communication with peers and perhaps this problem is continued to adolescent. In fact many studies show that about 70% of children with this disorder are rejected by their peers [25]. In fact the children with inattention-hyperactivity disorder more intervene than the other children and have more social relations with others but despite their interest in communicating with others , adjusting of their behaviours with social situations is very difficult for them and some of these children have negative and compulsive behaviours [34]. A very important aspect of communicating with others is called trans- social behaviour. The trans-social behaviours are actions like cooperation, protection and care of others that is done voluntarily in order help and benefit others [35]. In fact , hyperactive children have less social knowledge for

creation a relation and solving the conflicts between their peers, totally problem in communication with peers is common problem in children with inattention-hyperactivity disorder [25].

Common treatment of inattention-hyperactivity disorder is consist of pharmacological and non-pharmacological treatments. Experimental researches evaluated the rate of efficiency of pharmacotherapy in comparison with non pharmacotherapy. With attention to behavioural interventions it can be resulted that the combination of methylphenidate drug and behavioural therapy is effective in decrease of inattention-hyperactivity disorder syndromes and also the combination of these two treatment in this disorder is caused to decrease of the primary dose of prescribed drug and also it causes to more acceptance of treatment by parents of children [36].

Pharmacological treatment of inattention-hyperactivity disorder:

among the common treatment for individuals with inattention-hyperactivity disorder , pharmacotherapy like use of stimulant drug is considered as a main choice, because responding to this treatment is very impressive. Although many of patients despite the treatment still suffer from the residual deficit symptoms [37]. Pharmacotherapy is a choice that is usually used for school age children and also adolescents that they have severe inattention-hyperactivity disorder [38]. Adherence to medication in individual with inattention-hyperactivity disorder is completely depend to this matter that not only the child and his parents be agreement with pharmacotherapy itself, but also they accept the treatment expectancy and probable side effect of drugs [39]. Pharmacotherapies that now are used for this disorder is include: guanfacine and psychostimulants. Psychostimulants with rate of 65% to 75% and guanfacine with rate of 50% to 67.5% improve in short-term the symptoms of inattention-hyperactivity disorder [40]. Despite the decrease of signs in

use of pharmacotherapy merely, there are very little testimonies in improving of it that the pharmacotherapy is caused the long-term change in signs, mental, social and educational consequences in individual [41]. More over many of affected to this disorder do not respond to pharmacotherapy. Or some of them suffered from severe side effects, and a little of affected to this disorder are experience normalization merely with use of pharmacotherapy [42]. The rate of normalization is very varied by means of its domain. In an normalization study semiotics with methylphenidate in children with attention-hyperactivity disorder show that inattention rate is normalized in more than 50% of participants with this disorder and only 30% of them showed normal educational efficiency. More over for inconsistency between the decrease of symptoms and the long-term continuous of defect function in individual after pharmacotherapy, it demonstrate the necessity of doing therapies that without negative results lead to better deletion of main signs [43].

Non –pharmacological treatment of inattention-hyperactivity disorder:

the cognitive behavioural therapy of inattention hyperactivity disorder emphasizes on learning of childhood skills and or compromise and management methods of this disorder and or similar problems. This cognitive therapy does not prepare the necessary scales for experimental support because the long-term effect of it is limited and generalization of learned skills is very difficult to the environments that are different from learning primary environments [44].

Although others believe that cognitive behavioural therapy has had promising results in treating inattention-hyperactivity disorder [45]. In total non-pharmacological treatment of inattention-hyperactivity disorder consist of seven kinds of treatment:

Behavioural modification:

behavioural modification means the use of positive enforcement or a few reward and punishment for shaping the behaviour. The children with inattention-hyperactivity disorder experience many problems at school and they have abundant behavioural problems at home. Behavioural modification is very effective on improvement of child educational function and his family relationship. More of specialist prescribed that the behavioural modification program is a part of children treatment plan with inattention-hyperactivity disorder [46].

Neurofeedback:

the children with inattention-hyperactivity problem have some differences in frontal lobe of their brain in comparison with others. The frontal lobe is a part of the brain that is correlate with behaviour, personality and learning. The aim of neurofeedback is behaviour change by means of brain change. The human brain produce measurable electrical signals. Neurofeedback measures these electrical waves by an instrument that is called electroencephalogram (EEG). Five different brain waves are consist of Alpha, Beta, Gamma, Delta, Theta. Some of investigations declare that the individuals with inattention-hyperactivity disorder have abundant Theta waves and less Beta waves. The neurofeedback treatment is based on this opinion that it can correct this different by instruction the individuals with inattention-hyperactivity disorder toward the different use of their brain. Neurofeedback specialist are measuring the brain activities of individuals with inattention hyperactivity disorder by connecting electrode to the head of them and by means of it they prepared a print than individual mental waves during the treatment session. The specialist of neurofeedback guide the patient for doing the special task , on the basis of the feedback that they take than the changes of individual brain waves. This process may consist of sounds or other stimulants that stimulates the brain for the different process of information. And perhaps it consist of music, sound or tones

that suddenly started or paused. Neurofeedback followers declare that this gentle feedback can change the brain waves gradually and the symptoms of inattention-hyperactivity disorder is changed with change of brain waves [47].

Multimodal psycho-social treatment :

it is important to say that the physicians should be very comfortable in use of multimodal treatment perspectives in inattention-hyperactivity disorder. The treatment should include instructions with up-to-date information, behavioural interventions, school based support, instruction of social skills, and also pharmacotherapy for many others [48]. A comprehensive behavioural perspective should emphasize on creation of communication , the children with inattention-hyperactivity deficit should benefit than social skills instruction in clinics, schools, summer camps, or the environment with individual counsellor. These instructions are based on initialize, build and keep the successful relation with peers. Used method are include : role play, modelling, exercise and positive feedback. It seems that social skill group when have the most efficiency that is used with other intervention programs , it means school and parents base programs [49].

School based programs:

there are some practical interventions that the parents should pay attention and follow them: follow than the golden rule for regulating the child`s behaviour , it means following the request of parents and teachers. For more concentration of child an object should be given to him and the permanent works and movements of child should be neglected as far as possible. An environment should be prepared for child so that he can focus on doing his job (for example he is sited at the first row of chairs and far from window and unnecessary objects should not be on the table) , sport exercises like swim is used to increase the attention rate and movement

control strengthen and enhance self-esteem. Use than positive enforcements (like give reward to child just in front of positive behaviours, give special rewards that are different from regular rewards for enforcement of child`s feeling) , for bigger children and adolescents should be regulate a behavioural contraction for enforcement of positive behaviours or deletion of negative behaviours, some clear and direct orders should be used, the chance and choices is given to the child with this disorder for individual making decision [50].

Working memory training:

working memory means keeping of information for several second. The ability to management sensory barriers enables the individual to take part in complicated and goal based activities. So the working memory is recognize as a main part in higher level of cognition aspect and is protected by spread web of information between frontal and occipital lobes. Perhaps the results of Akman and others 2016 be rewarding, in the field of cognition instruction which is the growing field in neuroscience. Specially the increasing interest to working memory instruction in potential treatment of children with inattention-hyperactivity disorder defect [31]. Attention to this new finding is very important that how the under web`s of white matter is connected with different aspects of working memory and it causes the design of new version of instructional games of working memory that is challenged the several field of working memory and it use than video game with interesting structure that perhaps regarded ad non-pharmacological treatment for inattention-hyperactivity defect disorder. More studies in the field of working memory instruction to the child with this disorder should challenge the ability of these children and update , use and enhancement the working memory content flexibility [51].

Parent training: among the parent training programs can be refer to behavioural parent therapy (BPT). In this programs parents of

child with this disorder is taught to manage the behavioural and emotional disorder of his child and be a predictable, positive, and stable for him. This program can be very effective for the children with inattention-hyper activity disorder with mild behavioural problems [52]. Findings show that parent behavioural treatment program in children with inattention-hyperactivity defect disorder is very effective on several factors such as inattention, compulsivity-hyperactivity syndromes, social problems, aggression and behaviours indicator of low breaking that is reported by parents. More over parent behavioural instruction program was successful at decrease the problems like anxiety-depression, withdrawal-depression, physical problems and anxiety problems. The investigations show that this program is helped a lot to the parents in behaviour management of children who were hyperactive and compulsive and have weak social skills [53].

Self-monitoring:

self-monitoring is one of the suggested problem-solving with a simple usage, and it designed to strengthen the self-management skills of children and support than their educational, behavioural and social growth of them. This flexible strategy increases the probability of suitable behaviour occurrence and in turns decrease the probability of unsuitable behaviour occurrence. Findings show that self-monitoring is one of the most functional of self-management strategies . also d=children with inattention-hyperactivity disorder and children with emotion behavioural disorder show a lot of improvement in educational skills. Testimonies show that the results of self-monitoring can be expand to the out of class room and become stable in an individual for ever[54].

So in total, the behaviour of children with inattention-hyperactivity disorder, the behaviour of their parents, manner of their growth , and also the parents judgements, and their stress rate will lead to parental problems

that by itself affects the child behaviour with inattention-hyper activity disorder. So treatment program should be concentrate on child and parent , because the generalizability of cognitive behavioural therapy is very low in children with inattention-hyperactivity disorder but the rate of generalizability will increase with parents entrance in treatment process [44].

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