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The Effectiveness of A Family Support Program Depending on Activation of the Brain's Executive Functions in the Treatment of Attention Deficit Hyperactivity Disorder

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Abstract: *ADHD is a type of behavioral neurological disorder resulting from a disorder in the structure and functions of the brain and appears in early childhood, it is essential that children with ADHD receive appropriate treatment through medical, psychological and educational intervention, as well as behavioral management, so parental support and training parents on how to deal with and help the child, is a critical component of a successful treatment.This study aimed at identifying the degree of effectiveness of family support programs based on the activation of the executive brain functions in the treatment of Attention Deficit Hyperactivity Disorder in resource room of ADHD and learning difficulties in the Eastern Province in Saudi Arabia from the parents point of view. The experimental descriptive approach was applied in this study using tow tools (a questionnaire and an experimental program),where the sample of the study consisted of (85) parents. The program was applied to two groups (control and experimental), the results of the study showed that the degree of effectiveness of family support programs depending on the activation of the executive brain functions in the treatment of ADHD and hyperactivity in classes of learning difficulties in the Eastern Province of Saudi Arabia. The results of the study showed that there were no statistically significant differences in the effect of variables (gender, level of education, marital status), and recommended the need to conduct educational training sessions for parents on a continuous basis, helping them to deal with their children suffering from disorder and poor attention properly.*

Keywords: *Attention Deficit Hyperactivity Disorder and Functional Brain Functions*.

1. Introduction

The short attention span and increased activity levels are a normal part of childhood in general, but for children with Attention Deficit Hyperactivity Disorder (ADHD), it may be the result of a defect in the executive brain functions, these behaviors are excessive and inappropriate and interfere with daily performance at home, school and with peers. It affects the performance of children with ADHD and makes them unable to adapt adequately, this disorder appears in the form of three patterns: some children with

ADHD have problems with attention only, and some other children only have problems with hyperactivity and impulsivity. The third pattern: Children with a common pattern that combines problems of attention-deficit, hyperactivity, and impulsivity, which may accompany their development in adolescence and youth. Children with ADHD may become less active, yet they continue to face major problems with distraction, impulsivity in decision making, and poor control of movement (Ng et al., 2017; Russell et al., 2016).

A common belief about ADHD is that it is considered primarily a behavioral problem, that is, it relates to children who do not wish or cannot sit motionlessly and are unable to listen to the teacher and follow the instructions and rules of the classroom. Researchers have now realized that ADHD is not a behavioral disorder as it is a problem in the development of the frontal lobe of the brain, which is the management system and responsible for executive functions (Chu et al., 2012; Barkley, 2020).

ADHD is a type of behavioral neurological disorder resulting from a disorder in the structure and functions of the brain and appears in early childhood, and its characteristics and symptoms vary between individuals according to its type and degree, each individual has its characteristics and the symptoms may be mild, moderate or severe. As for children with ADHD who suffer from dysfunction of the cerebral cortex in the frontal lobe region and is directly responsible for many of the main features accompanying this disorder such as the individual's inability to effectively plan, organize and pay attention, persistence and remain vigilant, in addition to using Working memory, controlling emotions, and taking the necessary decisions to achieve psychological compatibility and academic progress. These features are known as executive brain functions and are directly responsible for our success or failure in any task, whether it is academic, social or professional (Shaaban, 2017; Al-Rababah, 2015).

The author in (Brown, 2017) also showed that children who have ADHD belong to a family member who has suffered from this disorder, like parents having ADHD is related to the chance of affecting children by 50%, and the chance of affecting the brothers increases to 29% consistent with what was confirmed by genetics research, also Until the injury of one of the identical twins is accompanied by the possibility of the other twin to have ADHD by 80%, and this percentage in non-identical twins decreases to 32%, but in the case of the first-degree relatives having ADHD likelihood of developing ADHD ranges between 10% and 35%.

Many studies have indicated that individuals and their parents who suffer from ADHD face many negative features and difficulties in controlling themselves and self-organizing their actions, but they are also distinguished by their uniqueness and innovation and they should be proud of that, these individuals need what stimulates their brains to turn their negative traits into creative positivity, as these individuals often suffer the negative traits that are associated with this disorder when they face tasks that make them feel bored, so they get distracted and movement becomes their only way to re-energize the brain (Al-Qamish and Al-Maayta, 2007; Ungar, 2020).

The familial effect of ADHD is widespread in various situations, both in terms of education and academic performance, home life, peer relationships, and emotional social development (https://www.myvmc.com). Studies that have examined the relationship among the genetic factors and the ADHD indicated that between 55% and 92% of the symptoms of ADHD are associated with genetic factors (Mick et al., 2004). Chemical theories have also suggested that ADHD occurs as a result of dopamine dysfunction, a neurotransmitter concentrated in the brain regions responsible for movement and impulsivity (Goldstein and Goldstein, 1992; Canestri et al., 2018).

Also, several studies have stressed the importance of the parents of the child with ADHD controlling the pressures they face as a result of their children's behavioral problems through the immediate control of the child's behavior during the situation, and controlling the emotions and pressures that the parents face (Al-Jaafara, 2008; Harazni and Alkaissi, 2016; Corcoran et al., 2017; Ma et al., 2018). The parents may express their rejection of their child's behavior by screaming and arguing with the use of beating, which in turn leads to a significant deterioration in the behavior of the child, and leads to more problems in the relationship between the child and his family, as these wrong parenting methods destroy the child's self-image, this results in a decline in his abilities and skills, which appear in the form of weakness in academic achievement, in addition to inappropriate and extreme relations with others, brothers, peers and teachers (Al-Khashrami, 2004).

- **Theoretical literature**

The American Academy of Child & Adolescent Psychiatry & American Psychiatric Association, 2013 indicated that ADHD is a neurodegenerative disorder, characterized by difficulty in being active, hyperactivity, and impulsivity (acting before thinking). ADHD is usually identified in children in primary school, but it can be diagnosed at any time from pre-school to adulthood, where recent studies indicate that approximately 10% of children aged (4-17) years are reported by their parents, where ADHD is diagnosed through executive functions of the brain, so in a class of 30 children, two to three children may suffer from ADHD (Canestri et al., 2018).

The author in (Johnston, 2015) defined ADHD as a neurological disorder that usually affects a person early in life, as symptoms begin to appear in children so that the child becomes an impulsive and aggressive opponent, does not obey orders, does not satisfy the desire of parents or even teachers in school, and is busy Always with small things, his attention and focus is greatly weakened, and he is not able to assimilate or integrate with the surrounding environment in the home, school or club, as he is unable to control his behavior.

ADHD is defined as a neurological condition that spans the family, requires a comprehensive evaluation from professionals, includes treatment, medical, psychological, and educational intervention in addition to behavioral management with appropriate intervention and support. People with ADHD can work successfully in the community. ADHD is characterized by three primary symptoms: hyperactivity, impulsivity, and lack of attention (difficulty concentrating and maintaining attention). It consists of three types; Inattentive type, impulsive hyperactive type, and a combination type including inattention and hyperactive impulsivity (Chu et al., 2012).

Many researchers consider that ADHD is a heterogeneous disorder spread throughout the world, and usually continues from adolescence to adulthood, the diagnosis of the disorder continues with an accurate history with an understanding of the developmental presentation of natural behavior and symptoms of the disorder. It has been reimagined as a more chronic condition, With nearly half of children continuing to exhibit symptoms and disability in adulthood, as most individuals with ADHD have an accompanying disorder, including anti-social, behavioral, or anxiety disorders (Mick et al., 2004; Wender and Tomb, 2016). In addition, ADHD carries a significant imbalance in the academic, professional, and social fields that require treatment, so the related data strongly support the neurological and genetic basis of ADHD, with a cerebral dysfunction in catecholamine as one of the central outcomes (Biederman et al., 2006; Klein et al., 2017). It is concluded that ADHD: is a cerebral disorder characterized by a persistent pattern of inattention and / or hyperactivity-impulsivity that interferes with performance and is among the most common neurological behavioral disorders presented for treatment in children, and has a high rate of Regular psychosocial problems such as Oppositional Defiant Disorder (ODD), Behavior Disorder, Mood Disorder, and Anxiety over Life Span, so the social and societal costs for untreated ADHD patients are significant, including academic and professional achievement, delinquency, and difficulties in interpersonal relationships.

- **Causes of ADHD**

There are many causes, including neurological causes, and it is very important to confirm that the environment and social factors or bad education do not lead to an individual with ADHD because it is a neurological disorder, meaning that its causes lie in the neurological composition of the brain, and the brains of these individuals appear to be 3% smaller than the brains individuals who do not have this disorder, research indicates that the neurological defect arises as a result of a lack of neurotransmitters in some brain regions, which leads to slow transmission of information between cells. To overcome this problem, doctors choose to prescribe some stimulant drugs or drugs that improve the level and effectiveness of these carriers such as Ritalin, Strattera, Concerta and others (Shaaban, 2017).

- **Symptoms of ADHD for Individuals with Brain Executive Dysfunction**

Symptoms of ADHD as reported by (Saadat, 2014), in terms of distraction or lack of attention represented by (difficulty maintaining focus, frequent forgetfulness, lack of attention to details, mistakes caused by neglect, inability to finish what he started, and anarchy, loss of personal things, avoidance of homework, and inability to follow instructions), as for impulsivity symptoms, which are represented by (lack of patience, the inability to wait for the role, the haste to answer, and the interrupting others), while for the symptoms of hyperactivity (the inability to staying calm, not being able to play calmly, talking too much, jogging and climbing).

Many scientists have indicated that there is no specific cause for ADHD, but there are some reasons that may occur as a result of organic developmental causes of the nervous system and are represented by organic causes as a result of brain injuries during pregnancy or at birth such as (birth difficulties – mother illness during pregnancy - taking medications) or a disturbance in the chemical activity of the brain whose causes are not known, as the different brain chemicals lead to an imbalance in mood and behavior, and maybe genetic or heredity reasons, as studies have indicated the high relationship between identical twins to have ADHD, or environmental reasons such as the environmental pollution or lead poisoning (www.orient-news.net, 2013).

ADHD interferes with a child's ability to perform at school, do homework, follow the rules, develop and maintain peer relationships, and when children become adolescents, ADHD can increase the risk of school dropout or facing disciplinary problems, adolescents with a disorder may suffer hyperactivity and lack of attention are also of increased risks and accidents in cars, and they are more likely to be addicted to smoking or drug abuse, they face employment problems, and more family problems and more divorces and face other mental health problems in addition to ADHD (Abu-Ahmed, 2017).

- **Attributes of Individuals with ADHD Caused by Dysfunctional Brain Function**

As children with ADHD or ADD are often described as uncooperative or aggressive because of their physical and social interaction. Although these children can be more sensitive, their good characteristics are often overwhelmed by the control of their unacceptable behaviors due to the differences in brain function, so children behave before they think, and often cannot manage their initial response to any situation, in addition to not being able to self-organize and cannot adjust their behavior taking into account

future consequences, some studies show that differences in the brain of those with ADHD are partially responsible for these symptoms (Editors, 2018).

If the person with ADHD wants to focus and work effectively on a task, they can get themselves to do it with training and persistence. Using executive jobs is just a matter of willpower because people with ADHD can re-practice their executive functions well by training in specific activities or tasks that make them consider short-term unpleasant results (Brown, 2013).

Several studies have indicated that individuals with ADHD and their parents face many negative features, difficulties in controlling themselves, and self-organizing their actions, but they are also distinguished by their uniqueness and innovation and they should be proud of this distinction and uniqueness, and these individuals need what stimulates their brains to turn their negative attributes into creative positive, as these individuals often experience the negative traits associated with this disorder when they face tasks that make them bored, distracting them and movement becomes their only way to re-energize the brain (Shaw et al., 2007; Baum et al., 2017).

It is essential that children with ADHD receive appropriate treatment through medical, psychological and educational intervention, as well as behavioral management, so a trained team is required, in addition to training parents on how to deal with and help the child, because parental support is a critical component of a successful treatment program, in which the desired behavior is rewarded, and it is the most appropriate and effective form of behavioral management. Reinforcement needs to be applied continuously (Schoeman, 2017).

It concludes that ADHD is among the most common neurological behavior disorders among children and adolescents, often chronic with prominent symptoms extending into adulthood, and ADHD is often associated with simultaneous disorders, including challenges, stubbornness, and mood Anxiety and drug abuse.

- **How to Deal with Children with ADHD who Suffer from Executive Brain Dysfunction**

Brain executive functions are cognitive skills that facilitate a person's critical thinking and self-organization. These jobs help our brains in setting goals and making decisions, which represent a set of related skills that help in setting priorities, organizing, and coordinating an individual's ideas and behaviors. These jobs help individuals manage their feelings and actions and monitor their behavior.

A person’s permanent interaction with his environment and his interaction with it requires him to define this environment so that he can adapt to it, exploit it, protect himself from its dangers, and participate in aspects of its activity. The first condition for this knowledge is that he should pay attention to what concerns him from this environment and be aware of his senses so that he can influence them, and control

them with his mind and muscles. Since attention and sensory perception are the first steps in an individual's contact with his environment and its adaptation to it. Rather, they are the basis on which all other mental processes are based. In order to learn something or think about it, we must pay attention to it and realize it, because attention is an important factor that helps in finding effective learning (Saadat, 2014). Dealing with a highly active child is a major challenge for parents; Because it is stressful, and it may also be embarrassing, and the problem may be exacerbated, leading to the school not accepting such children, but a distinction must be made between the child's natural activity and the excessive activity, and whether every child in movement is hyperactive or not (Rebhi, 2017) . The American Psychiatric Association (1994) indicated that a child's ability to maintain attention develops, reduces his activity over time and with practice and maturation. These skills are an essential component of school education and social success. For children with ADHD, this ability is greatly diminished, and may lead to behavioral and social difficulties in early or middle childhood. ADHD presents a behavioral difficulty that includes central features such as lack of attention, hyperactivity and impulsivity (American Psychiatric Association, 1994). The group providing early intervention to children and their families contributes to maximizing development and success for them in the future (Tracey, 2009; Fernandez et al., 2017).

The authors in (Garberm and Smith, 2003) outlined several proposals that help parents improve the performance of their ADHD children, such as training parents, practicing effective methods and strategies to improve children's behavior at home, supporting family unity and cooperation, building a positive relationship with the child, ensuring stability with the child, attracting good friends, obtaining training to solve and employ problems, working to support the child’s school success, training the child on time management, organization and self-monitoring strategies that contribute to improving executive brain functions and searching for medical treatment for the child with severe ADHD. Given the widespread of ADHD on the one hand, and the complexity of the disorder and the multiplicity of its symptoms on the other hand, confirm the necessity to reach therapeutic methods - therapeutic integration - to surround the problem and reach the school in particular to a healthy climate to achieve its full goals and then help the concerned pupils to achieve compatibility, which returns to the child with a high level of self-confidence and self-esteem, but the debate was active about the appropriate and effective treatment method for this disorder to be followed. The problems is that there is no specialization or theoretical school that produced an appropriate and satisfactory treatment method. Therefore, different methods had to be taken into consideration, where the authors in (Rebhi, 2017; Nour, 2002; Al-Qamish and Al-Maayta, 2007; Al-Saleh, 2015) indicated an effective treatment for cases of hyperactivity, and the distraction caused by ADHD in the executive brain functions, and achieved effective results represented in the following aspects:

- An educational aspect: by activating the child and giving him an effective role, whether at home or at school, and involving him in the activity that expend his energy and develops his talents.

- The family aspect: by allowing no more one child to play with the ADHD child inside the home, training the child and helping him to implement some skills, and that the parents must have patience and fortitude.
- Behavioral therapy: Through counseling sessions and programs to support positive behavior.
- Medicinal treatment: This is done by presenting the child to the doctor, where he examines and ascertain the presence of the disorder and prescribes appropriate treatment for it. We will talk about it in detail.

One of the empirically supported psychological treatments for ADHD is parent management training (BPT). Over many years and in many studies, BPT has been documented to improve child ADHD behavior and not adapted parenting behavior. In some studies, it was found that BPT leads to benefits in additional areas, such as parental stress and child behavior in the classroom. However, BPT literature on children selected as having ADHD differs from research conducted on BPT for children selected as having ODD and conduct disorder (*CD*) in the main factors, and sub-factors that may contributes to treatment outcomes for families of children with ADHD, and recommendations are made for future BPT research in the field of ADHD (Chronis et al., 2004).

The author in (Muhammad, 2016) focused on the necessity of encouraging parents dealing with children with ADHD, not focusing on the undesirable behavior of the child, but always focusing on his desirable or positive behaviors, and talking to him only when he is attentive, and not forcing him to do something without showing the motivations, and away from comparing the child to others, and constantly engaging him in sports and artistic activities, cooperation with doctors and teachers who deals with him and participating them in the decisions taken on the child.

But when children with ADHD are left untreated, as reported in the Parents Medication Guide 2013) there is an increased risk of failure in school and dropout in both high schools and colleges, behavior and discipline problems, social difficulties and family conflict, in addition to accidental injury, alcohol and drug abuse, depression, anxiety, criminality, arrest, and other mental health disorders, and therefore employment problems, driving accidents, unplanned pregnancy and sexually transmitted diseases for females.

We conclude that ADHD is one of the diseases that has spread among children in the recent period for various reasons, including genetic, others psychological and organic, as some studies have proven that ADHD child suffers from disorders in the EEG, as many mothers find it difficult to deal with her child with this disorder, behavior modification and behavioral cognitive strategies are one of the most important steps that parents wish to do to control their child and increase his concentration ability.

- **Previous Studies**

Several studies related to ADHD associated with abnormal brain executive functions such as (Counts et al., 2005) were conducted to study the relationship between the family adversity index and types of ADHD (DSM-IV) and associated behavioral problems. The relationship between the family's who have subtypes of ADHD was examined. A qualitative and experimental approach was used. The study sample consisted of (206) parents, their children between (13-7) years old, interviews and classification measures were conducted on the socioeconomic status and psychological disorders of males throughout their lives, marital conflict and stressful life events as study tools, The results of the study showed that families of children with ADHD are exposed to the risk factors associated with family adversity and suffer from more risks than families of children who suffer from disorders accompanying the ADHD such as behavior disorders, ODD and it has been shown that the behavior disorders are closely related to the low economic and social status of the family, but the marital problems were related to ADHD as evaluated by teachers and parents.

Also (Shaw et al., 2007) conducted a survey to uncover the debate about the nature of the brain development disorder that supports ADHD in particular, detecting whether this disorder is caused by a delay in brain maturation or whether it represents a complete deviation from the typical growth model. Using neurosensory techniques, they estimated the thickness of the cortex at 40000 brain points from 824 MRI scans, the study sample consisted of 223 children with ADHD, a questionnaire was distributed as a tool for the study, where the results of the study showed that maturation has a significant impact in children with ADHD, with the primary sensory areas reaching the peak of the thickness of the cortex before multiple association areas, and the results of the study showed that there were differences attributable to the average age variable in which 50% of the cortical points reached the peak thickness of this group was 10.5 years (SE 0.01), which was noticeably later than the 7.5-year average age (SE 0.02) of the typically developing controls (log rank test $\chi(1)2 = 5{,}609$, $P < 1.0 \times 10{-}20$).The most prominent delay in the prefrontal regions was important for control of cognitive processes including attention and motor planning. Neuroanatomic documentation were not previously reported for delays in regional cortical maturation in ADHD.

The authors in (Wymbs et al., 2008) conducted a study in England aimed to detect the rate of marital conflict among adolescent parents and young adults with ADHD, by comparing families of individuals with ADHD, as the study sample consisted of (488) parents, the questionnaire was used as a study tool, where the results of the study showed that the parents of youths who were diagnosed with ADHD in childhood and number (N = 282) They were more likely to divorce, and they had a shorter latency to divorce than parents than children without ADHD (N = 206). In a subset of youth families with ADHD, prospective analyzes indicated that mother and father education level, paternal antisocial behavior, child age, race,

oppositional-defiant/conduct problems had an impact on the timing of divorce between parents of youth with ADHD.

The study of (McIntyre and Hennessy, 2012) aimed to explore the experiences of parents of children with ADHD in Ireland. The sample of the study consisted of (18) parents, ranging in age (7-12 years) with ADHD diagnosis in open interviews. Objective analysis was performed on the content of the interview, and the results of the study demonstrated the necessity of implementing family-focused support for children with ADHD, and the importance of educating the general population about ADHD. Finally, the need for a more positive approach based on pedagogical strategies towards children with ADHD was highlighted.

The authors in (Chu et al., 2012) conducted a study in China. The study aimed to reveal the level of adjuvant family therapy to treat children with ADHD in Nanjing schools in China. The descriptive approach was used, the study sample consisted of 46 children aged between17 and 10 years, a scale consisting of four dimensions of family function was used: family atmosphere, individualism, moral absolutism, and personal responsibility for psychological problems. As the results of the study showed the level of assistive family therapy for the treatment of children with ADHD was poor, as the results showed that there were no differences between groups in the perceived causes of psychological problems, but children with ADHD reported a family atmosphere less independent of parents , And more ambiguity about "right" and "wrong" in the family.

The authors in (Laukkanen et al., 2014) conducted a study in Finland aimed at revealing the relationship between the temperamental characteristics and mothers' parenting styles, and the role of mediation and moderation in maternal well-being in these societies. The mothers of 152 first-grade Finnish children (79 girls and 73 boys) were filled in questionnaires to measure parenting methods (affection, behavior control, and psychological control), psychological well-being (i.e. depressive symptoms and self-esteem), in the temperament of their children. The results showed that the decrease in positivity in children was associated with a decrease in maternal affection, while negative emotions for children were associated with the high attempts by mothers in terms of psychological and behavioral control. The impact of low levels of positivity in children and levels of hyperactivity on the psychological stability of mothers was mediated through the maternal well-being: the more active and the less positive a mother perceived her child to be, the lower was her well-being and as a result, psychological stability was more important and applied.

The authors (Suzuki et al., 2016) in Japan conducted a study aimed at explaining the relationship between children's behavior (i.e., positive and behavioral social behavior) and parenting style (i.e., indolence and excessive exaggeration) for caregivers using longitudinal data in the Japanese population. This data was collected when the children were (9-7.5) years. They have proposed three hypotheses: the

behavior of children at the age of 7.5 years, will predict their behavior in the age of 9 years. The behavior of children (9-7.5) will predict parenting of their caregivers; The parental care style for caregivers will influence the behavior of their children at the age of 9 years. The behavior of children and parenting behavior was assessed using the strength and difficulties questionnaire and the parenting scale. The hypotheses were tested using structural equation modeling (SEM). The results of the social behavior analysis showed that the behavior of children at the age of (7.5) predicted their behavior in (9) years. The problematic behavior of children at the age of (7.5) years has led to the emergence of overreactive parenting in their caregivers in (9) years, which increased the problematic behavior and decreased positive social behavior in children at the age of (9) years. These results indicate the effectiveness of the association between the parenting style of caregivers and child behavior in Japan.
The researcher has benefited from these studies in developing a data collection tool, identifying its results and comparing them with the results of the current research and using the appropriate statistical treatments, and in supporting some opinions related to the theoretical framework, therefore the current study is distinguished from previous studies in addressing the topic of the relationship of brain dysfunction in the occurrence of ADHD at children with learning difficulties and ADHD, by identifying the degree of effectiveness of family support programs that depend on activating the executive brain functions in treating ADHD among the parents of students in the classes of learning difficulties, attention disorder and hyperactivity in the eastern region of Saudi Arabia.

In view of the above, and through the researcher knowledge, ADHD problems are among the most common problems that people suffer from, and often it is related to a defect in the cerebral cortex that leads to multiple disorders among the affected individuals, which leads parents to adopt wrong methods in dealing with their children, which reflects negatively on the child's behavior and performance, and often destroys the child's self-image and increases his frustration, so parents have a prominent and essential role in building and shaping the child's personality, therefore training parents in appropriate ways to deal with children and train them on organizing, self-monitoring and the time management, which is an essential element for the success of their role in raising their children, and contribute significantly to treating their children and avoiding psychological problems that accompany their sense of failure in dealing with the problems of their children.

- **The Study Problem and Questions**

Children with problems, such as ADHD, and problems in the social, emotional and behavioral functions, often show a defect in their use of the executive functions of the brain, and they have difficulties starting tasks, maintaining levels of interest and effort, following multi-step instructions, staying organized, and

managing time effectively. Also, it is important to note that many children will show executive strength points in certain regions and dysfunctions in other regions, these differences can often be explained by biological and environmental factors (http://www.wandanac7.sa.edu.au).

The weak executive functions of children with ADHD are apparently variable; where every ADHD children has specific activities or situations in which he does not find difficulty in executive jobs while suffering from a large weakness in most other aspects, these strong aspects of the child received strong personal and family attention, because of their belief that something unpleasant will happen if they do not take care of this task, and this shows the ability to train people with ADHD on many important strategies that help them succeed, and in return, children and adults with high intelligence can suffer from ADHD, which greatly weakens their ability to use their strong cognitive skills continuously and effectively in many daily life situations.

Therefore, it is necessary to seek to develop the skills of parents in how to deal with their children with ADHD, and the scarcity of Arab studies to search and talk about this important group where mishandling with ADHD children may exaggerate their problems, so it is necessary to train and educate this category of on how to deal with ADHD children, and from here the idea of this study emerged, where the problem of the study is based on the following questions:

- What is the effect of family support programs that depend on activating the executive brain functions in treating ADHD in the eastern region of Saudi Arabia from the viewpoint of parents?.
- Are there statistically significant differences at the level of significance ($\alpha = 0.05$) between the means of of the responses to the effectiveness of a family support program that depends on the activation of the executive brain functions in the control and experimental groups for ADHD treatment due to the effectiveness of the program?.

- **Aim of the Study**

This study aimed to identify the effectiveness of family support programs that depends on the activation of the brain's executive functions in treating ADHD in the eastern region of Saudi Arabia from the viewpoint of parents. And detecting the effectiveness of a family support program which depends on the activation of the brain's executive functions in the control and experimental groups of ADHD treatment attributed to the program's effectiveness.

- **Study Significance**

The importance of the study was determined by two aspects (theoretical and practical) as follows:

- **Theoretical Importance**

The importance of this study stems from opening new horizons for researchers to conduct other similar studies, on the effect of family support programs that depend on the activation of executive brain functions in ADHD treatment in schools for learning difficulties in the eastern region of Saudi Arabia, and the reasons for studying the effect of the family support program for people with ADHD and people with learning difficulties accompanying ADHD, as the issue of the effect of the family support program is one of the issues of greatest importance because of its impact on parents that helps them deal with their children in a sound way away from the intolerance and anger of their children's behavior, and despite the importance of this topic, the studies that talk about it are rare and the researcher did not find any Arab study that corresponds to the subject of this study.

- **The Applied Importance**

Where the importance of practical study emerges from the following dimensions:

- This study is expected to provide a feedback on the degree of effectiveness of the program by applying it to other groups of parents in the various schools whose students suffer from this behavior.
- The results of this study may also contribute to introducing workers in special education schools to the importance of the role that parents play in developing themselves to help their children with this disorder specifically and relieve them. What emerges from the results of this study is to recommend a set of points that Researchers may benefit from to conduct further studies, and on various other variables.

- **Procedural Definitions:**

ADHD definition: The American Academy of Child & Adolescent Psychiatry & American Psychiatric Association (2013) defines it as: “A child who does not have the ability to focus attention, is impulsive and hyperactive, and these symptoms increase in severity in situations that require the child to match himself, autonomy, which shows deficiencies in the extent and quality of academic achievement and deficiencies in social functions.

Procedurally ADHD is defined as a physical movements that ADHD children suffer from resulting from an impairment of brain function, such as the inability to pay attention to tasks for a suitable period, impulsivity in performing work before thinking about its results, excessive physical activity moves from one activity to another, difficulty in arranging actions, difficulty awaiting his role in playing or in social situations, inability to focus, lack of self-control and impulsivity, dispersal to new stimuli, child's

rush without thinking about his actions, increasing the amount of movement and activity, non-purposeful muscle movements, and moving rapidly from one activity to another.

Brain Executive Functions: defined by psychologists as reported by (Barkley, Brown, and Dawson & Richard, 2013). The consensus is that executive functions regulate various brain functions that combine a person's perceptions, experiences, and memories toward a goal-oriented behavior (Shaaban, 2017). It is known procedurally as the problems faced by individuals suffering from ADHD resulting from impaired executive brain function, and the role of parents in treating and dealing with them through the responses of the study sample on the study tool.

Study Scope and Limitations: This study was limited to the effectiveness of family support programs that depend on activating the brain's executive functions in treating ADHD in the ADHD and learning difficulties classes in the eastern region of the Kingdom of Saudi Arabia for the academic year (2018/2019). Where the study tool was the parents' answers to the questionnaire statements that evaluate a family support program, consisting of (18) statements, and what were distinguished by the characteristics of validity and reliability, and a training program with 20 training hours was applied to experimental and control groups through the use of training workshops, social media through explanatory videos, and a diversity of treatment methods and strategies.

2. Methods and Procedures

- **Study Methodology**

In this research the experimental descriptive approach was used.

- **The Study Population and Sample**

The study population consisted of all the parents of students in ADHD and learning difficulties classes in the eastern region who are 118 parents, for the year (2018/2019). All of the study population was taken because of the small size of the study, and 118 questionnaires were distributed to the study sample, 33 questionnaires were deleted because they are incomplete, and the rest 85 are valid for arbitration.Table 1 shows the distribution of the study sample according to the variables.

Table 1: Distribution of the study sample according to the independent variables (gender, level of education, marital status).

Variable	Categories	Number	Percentage
Gender	Male	5	%5.88
	Female	80	%94.12

Level of Education	secondary	26	%30.59
	Bachelor	49	%57.65
	Master and above	10	%11.76
Marital Status	Separate	15	%17.65
	An existing marriage between the spouses	70	%82.35
	Total	**85**	%100.00

- **Study tools**

To achieve the objectives of the study, the researcher developed the study tools (a questionnaire and a training program) to reveal the effect of a family support programs that depend on activating the brain's executive functions in treating ADHD by referring to theoretical literature and related previous studies such as (Laukkanen et al., 2014; Suzuki et al., 2016; McIntyre and Hennessy, 2012).

The first tool consisted of 20 statements, also the indicators of validity and reliability was verified. As for the second tool, a training program with 20 training hours was applied to two groups (experimental and control) through the use of training workshops and social media through explanatory videos, and diverse methods and treatment strategies.

- **Study Tool Validity**

Face validity :The face validity of the tool was confirmed, as it was presented to a number of arbitrators with expertise and specialization from professors in universities, as the arbitration relied on 10 arbitrators from academic members in the colleges of education in the eastern region in Saudi universities, they were asked to read the questionnaire statements, express an opinion on the degree of clarity, the integrity of its language formulation and the degree of suitability for the field to which it belongs, and add or delete, or formulate, or suggest statements, and finally, state views in general on the degree of the questionnaire's suitability for the effect of family support programs that depends on activating the executive brain functions, until the questionnaire finally settled 18 items.

The reliability of the study tools: To calculate the reliability of the questionnaire, the internal consistency coefficient of the tool’s paragraphs was calculated to measure the effectiveness of family support programs that depends on activating the brain’s executive functions in ADHD treatment. To verify the consistency of the study tool, the Cranach’s Alpha formula for internal consistency was used. And that is by applying it to an exploratory sample from outside the study sample consisting of 20 parents, and the consistency coefficient was as shown in Table 2.

Table 2: Consistency coefficients of the study dimensions using Alpha Cronbach method for the exploratory sample.

Study Tool and it's Dimensions	Internal Consistency Reliability	Test-Retest Reliability
The effectiveness of family support programs depending on activating the brain's executive functions in treating ADHD among the classes of learning difficulties in the eastern region.	**0.94**	**0.95**

Table 2 shows that the internal consistency reached 0.94, while the Test-Retest Reliability was 0.95, and in light of the significance of validity and reliability, the results of the reliability are acceptable to achieve the study objectives.

- **Study Tool Correction Criterion**

The statistical model with 5-points Likert scale was adopted, with the aim of making judgments on the arithmetic means of the study tool and its statements. The statistical standard was adopted using the following equation:

The following statistical criterion was adopted using the following formula: Category Range = (Highest Value - Lowest Value) divided by the number of options Category range = 5-1 = 4 ÷ 5 = 0.8 Thus the criterion of judgment becomes as follows:

Arithmetic mean	Degree
From 1.00 to less than1.80	Very Low
From 1.80 to less than 2.60	Low
From 2.60 to less than 3.40	Moderate
From 3.40 to less than 4.20	High
From 4.20 to 5.00	Very High

- **The Training Program**

It is a set of workshops that parents have been trained on, it is prepared according to strategies to address the executive functions of the brain for children who suffer from ADHD. The training program included 20 training hours divided into 7 statements, and each has a set of additional support, as shown in Table 3.

Table 3: Training program for parents of students

#	Topics	Training hours	Additional support

1	Introduction about the disorder, ADHD children characteristics, their diagnosis, the Conners' rating scale dimensions for various methods of treatment, guiding families to deal with their children.	4	Research and studies
2	Executive brain functions, the importance of brain functions, stages of brain functions	3	Presentations
3	workshop on using organizational strategies, setting priorities with their children, planning, and starting work.	4	Explanation videos on WhatsApp
4	Training parents to use strategies to increase focus, follow-up focus and shift the focus of their children.	3	
5	Workshop on using the strategy of self-control and self-monitoring, endurance, perseverance, achieving goals, decision-making	3	Explanation videos on WhatsApp
6	Training parents to control their emotions, control feelings of frustration for their children, and Behavior modification strategies.	3	
7	Provide a large group of videos that provide emotional support and help families to accept the child, information about the disorder, urge them to work as partners with the school, adhere to appropriate practices for dealing with the child	Through application	Explanation videos on WhatsApp
Total		20 training hours	

- **Study Variables**

The Independent Variable: A training program on addressing executive brain functions. Dependent variables: Parents' views on the degree of effectiveness of family support programs depend on the activation of the brain's executive functions, which are determined by the responses of study individuals on all statements of the study tool.

- **Statistical methods used**

For the first question, arithmetic means and standard deviations for statements of the dimension of (the effectiveness of a family support program based on the activation of executive brain functions in the treatment of ADHD from the point of view of parents) were used on the experimental group.

For the second question, arithmetic means, standard deviations and ANOVA test of parents' responses were used on the measure of the effectiveness of family support programs that depend on the activation of executive brain functions in the treatment of ADHD in the eastern region of Saudi Arabia according to control and experimental groups to the pre-test. And one way variance analysis and effect size of parents 'responses about the degree of effectiveness of a family support program that depends on activating the brain's executive functions in addressing ADHD and hyperactivity in the eastern region of Saudi Arabia for both the control group and the experimental group on the post-test.

The researcher has presented a training program on strategies for the treatment of executive brain functions that helps in training parents to apply to children to enable them to succeed in their lives and this program consists of (20) hours of training distributed to a group of lectures for the families of children with learning disabilities who have ADHD, and the families of children with ADHD were presented as a training workshop by providing awareness and educational programs for how parents deal with their children and how to diagnose their condition, and assisting them in treatment as well as social communication through videos and explanations, also through multiple technology means, including presentations, educational pictures and videos that help parents to understand and apply them, by (20) training and educational hours in two consecutive weeks. The researcher distributed the study tool in Pre-test on all those who attended the first introductory meeting in the program, and 85 questionnaires were completed. The sample of the study was distributed into experimental and control groups in a random manner, and after that the tool was applied to the people who underwent the training program, then the tool was subjected to statistical analysis, where arithmetic means and standard deviations were used to answer the first question, while for the second question multivariate analysis of variance was used.

3. Results and Discussion

The results aimed at identifying the degree of effectiveness of family support programs that depend on the activation of the brain's executive functions in treating ADHD in the classes of learning difficulties and ADHD in the eastern region.

To achieve this, the study questions were answered as follows:

- The first question, which states: **"What is the effect of a family support program that depends on activating the executive brain functions in treating ADHD in the eastern region of Saudi Arabia from the parents' point of view?**

To answer this question, Mathematical means and standard deviations were calculated for the study sample responses on the training program statements, and table 4 shows that.

Table 4: Arithmetic means and standard deviations for dimension statements (the effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD from the point of view of parents) of the experimental group arranged in descending order according to the arithmetic means.

Order	#	Statements	Arithmetic mean	Standard deviation	Degree
1	17	Training parents to use organizing strategies and setting priorities with their children	4.67	.61	**Very High**
2	6	Training parents to use planning strategies, and start working with their children	4.60	.66	**Very High**
3	5	Training parent on how to use the self-control and self-monitoring strategies	4.56	.73	**Very High**
4	4	Motivating the child's parents to persevere in achieving goals and endure stress.	4.47	.71	**Very High**
5	7	Provide guidance to families as soon as possible after symptoms are discovered	4.47	.77	**Very High**
6	8	Training parents to use strategies to increase focus, follow-up focus, and shift focus of their children.	4.47	.83	**Very High**
7	11	Parent training on how to use a decision-making strategy with their children	4.47	.70	**Very High**
8	9	Educating parents to avoid forcing the child to do something without showing the incentives and motivations for doing this	4.44	.83	**Very High**
9	13	Training the parents on the importance of how to teach the child perseverance and control the speed and completion of work.	4.44	.82	**Very High**
10	16	Training parents to control their emotions and to control feelings of frustration for their children.	4.44	.80	**Very High**
11	18	Continuous training for parents on behavior modification and management strategies	4.44	.73	**Very High**
12	15	Considering parents as real partners in a professional relationship	4.40	.79	**Very High**
13	3	Providing enough information about ADHD for parents	4.33	.87	**Very High**
14	10	Urging parents to give their children confidence that he can accomplish his duties and let him know	4.30	.94	**Very High**
15	14	Emotional support for the familiesby accepting the child's condition and living with it	4.28	.91	**Very High**
16	12	Urge parents to talk to their children and tell stories to enhance their hearing focus and control of their attention	4.26	.93	**Very High**
17	2	The parents provide the child with an environment suitable for his condition to expend his excess energy by playing and occupying his time with various and purposeful activities	4.23	.72	**Very High**
18	1	Parents talk to the child and be frank with his situation, matters that gain the child's confidence in himself and his family, which facilitate his response to them.	4.07	.55	**High**
The effectiveness of a family support program that depends on activating executive brain functions			**4.41**	**.63**	**Very High**

To answer this question, arithmetic means and standard deviations were calculated for the degree of effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD from the point of view of parents on the experimental group, where the total arithmetic mean was 4.41 and the standard deviation was 0.63, and with a very high degree, as the arithmetic means ranged between 4.67 and 4.07 and with a very high degree.

Where paragraph 17 ranked first, with an arithmetic mean of 4.67, and a standard deviation of .61 with a very high degree of, whereas paragraph 18 ranked last, with an average of 4.07, and a standard deviation of .94 with a "high" degree.

The researcher may attribute the presence of a significant effect with a very high degree of effectiveness of a family support program that depends on activating the executive brain functions in treating ADHD , according to the parents 'estimates to their suffering with ADHD child which puts them under constant pressure, just as these children also suffer from difficulties in one or more executive jobs, which requires parents' awareness and the diagnosis of their children, but in many cases parents are not aware of the diagnosis of their children's condition (Lindsay, 2018).

Excessive activity is a clear challenge for the family, and those working with them, and how to diagnose and treat these children, to provide appropriate education for them in a manner consistent with

their abilities and their behavior, also families have an effective and important therapeutic role for children with ADHD, and dealing with them poses a great challenge to their families and teachers, and a physical and psychological depletion of the capabilities of those who deal with them, where the child with this disorder is a real problem for his family and himself, as in many cases he is aware of his problem, but he is involuntarily unable to control his movement and behavior (Muhammad, 2016).

The result was consistent with the findings of (McIntyre and Hennessy, 2012), which indicated the need to implement family-focused support for ADHD, and the importance of educating the general population about ADHD. Finally, the need for a more positive, serious approach was highlighted. Addcentre (2004) stressed the importance of controlling the pressures that face the parent of the child with ADHD due to their children's behavioral problems through immediate control of the child's behavior during the situation that occurs, and controlling the emotions and pressures that the parents face. Which causes the parents to express their rejection of the child's behavior through screaming and sometimes arguing with the use of beating, which in turn leads to a significant decline in the behavior of the child and leads to more problems in the relationship between the child and his family (Muñoz-Silva et al., 2017).

Wrong parenting methods also destroy the child's self-image , resulting a decline in his abilities and skills, which appear as a weakness in academic achievement, in addition to inappropriate and extreme relationships with others, brothers, peers, and teachers (Al-Khashrami, 2004). This very high result may also be attributed to the parents' ability to use the appropriate decision-making strategy, and to train the child to use them, and this is due to the importance of continuous training provided by those involved in implementing the awareness program for parents as well as their training in behavior modification and management strategies, and may also be attributed to the level reached by parents of knowledge in how to deal with their children and provide an appropriate environment for children, creating conditions and support capabilities in order to expend their excessive energy by playing, and occupying their time with various and purposeful activities in order to enhance their self-confidence, their adaptation to their community, and not forcing children to do things that the child does not like, as a result of cooperation with doctors and teachers and sharing information and decisions made about the child with them (Ringer et al., 2020).

Finally, statement 18 ranked last, with a high degree, which states, "Parents talk to the child and be frank with his situation, matters that gain the child's confidence in himself and his family, which facilitate his response to them." This high result may be attributed to the awareness that parents have gained from the training program which was presented in the form of awareness lectures for parents in terms of parents talking with the child about his situation, which gives the child confidence in himself and his family, thus facilitating his response to them and instilling the values of educational awareness among the parents, guiding them in providing moral and emotional support, and helping them to get medical and academic

services for their children, and this indicates parents' awareness of the way they deal with their children. The results of this study were consistent with the results of the study of (Counts et al., 2005), and the study of (Suzuki et al., 2016) which was highly effective.

The results of this study differed from that of (Chu et al., 2012), and by the study of (Laukkanen et al., 2014), which ranked a low degree.

- Results related to the second question which states***: " Are there statistically significant differences at the level of significance (α = 0.05) between the means of the responses to the effectiveness of a family support program that depends on the activation of the executive brain functions in the control and experimental groups for ADHD treatment due to the effectiveness of the program?.***

To answer this question, arithmetic means and standard deviations were extracted from parents' responses about the degree of effectiveness of a family support program that depends on activating the brain's executive functions in the treatment of ADHD in the classes of learning difficulties and ADHD in the eastern region of Saudi Arabia for both the control group and the experimental group, on the pre-test, the results were as follows:

Table 5: Arithmetic means, standard deviations, and a binary test of parents' responses to a measure of the effectiveness of family support programs that depend on activating the brain's executive functions in treating ADHD in the eastern region of Saudi Arabia according to responses of the control and experimental groups to the pre-test.

		Number	Arithmetic Means	Standard Deviations	*T* Value	Level of Sig
Group	**Control**	42	2.2844	.32769	.401	.689
	Experimental	43	2.2610	.19531		

Table 5 shows the absence of statistically significant differences in arithmetic means and standard deviations in the degree of effectiveness of a family support program that depends on the activation of executive brain functions in treating ADHD in the learning difficulties classes in the eastern region of Saudi Arabia attributed to the control and experimental groups on the pre-test.

The researcher also calculated the arithmetic means and the standard deviations of the parents' responses about the degree of effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD in the learning difficulties classes in the eastern region of Saudi Arabia for the control and experimental groups, on the post-test, the results were as follows:

Table 6: arithmetic means and the standard deviations of the parents' responses about the degree of effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD in the learning difficulties classes in the eastern region of Saudi Arabia for the control and experimental groups, on the post-test.

	Group	Number	Arithmetic mean	Standard deviation	T value	Level of sig
Effectiveness of a family support program that depends on activating the brain's executive functions	**Control**	42	2.2844	.32769	.401	.689
	Experimental	43	2.2610	.19531		

It is clear from the previous table that there is an apparent variance in the arithmetic means between the control group and the experimental group, on the post test, and to show the statistical differences, the researcher conducted the one-way analysis of variance, and the results were as is in table 6.

Table 6: one-way analysis of variance and size effect of parents 'responses about the degree of effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD in the eastern region in Saudi Arabia for both the control group and the experimental group on the post-test.

Source	Sum of Squares	Freedom Degree	Mean Squares	F Value	Significance	Eta Square
Corrected Model	64.253(A)	1	64.253	117.524	.001	.586
Intercept	1063.525	1	1063.525	1945.279	.001	.959
Group	64.253	1	64.253	117.524	.001	.586
Error	45.378	83	.547			
Total	1179.463	85				
Corrected Total	109.631	84				

The above table shows that there is a statistically significant effect of the parents 'responses on the degree of effectiveness of a family support program that depends on activating the brain's executive functions in treating ADHD in the classes of learning difficulties in the eastern region of Saudi Arabia for both the control group and the experimental group on the post-test where the eeffect size reached .586%, where the result showed that the program affected the activation of executive brain functions in treating the disorder by .586%. This is evidence of a positive reflection in the response of the study sample to the elements of the training program and its lectures in parents of both genders, where they have a better vision and culture in how to deal with their children who suffer from distraction and hyperactivity as a result of a defect in the cerebral cortex that led to a disruption in the brain function of their children, so the fathers and mothers all have a passion for motherhood and fatherhood that generate the desire to develop themselves so that they can help their children, and they cannot see their children in these behaviors and actions without providing support and assistance to them.

Also, parents of all academic qualifications who were subjected to lectures and educational seminars before applying the study tool in order to educate them and provide appropriate guidance to them in terms of how to interact and help their children, how to diagnose their condition, discover symptoms that appear in such a pathological condition resulting from a malfunction in the brain, and train them to the appropriate strategies to mitigate the impact of the disorder and help them succeed in life, all of this contributed to leaving a positive impact applying the program, which made the educational qualification at its various levels not an obstacle in interacting with the program that left them with more positive and effective awareness, which stems from the goal that they wish to achieve, in order to reach support and assistance for their children (Franke et al., 2016).

This finding is consistent with what (Wymbs et al., 2008; Nuri et al., 2019) have indicated that the disagreement between parents of children with ADHD is not uncommon, as the parents of children with ADHD suffer from marital dissatisfaction, they fight often, and they use fewer positive verbal sounds during child-rearing discussions compared to parents of children who do not have ADHD. Thus, the training program contributed to raising their awareness level, so they have a better vision and information after attending the training program in terms of dealing between the parents themselves, and adapting to the psychological situation that parents live with their affected children. The results of this study were consistent with the results of (Counts et al., 2005; Wymbs et al., 2008), and the studies of (Laukkanen et al., 2014; Suzuki et al., 2016), which indicated no differences.

4. Conclusion

Based on the results of this study, the following are recommended:

- The necessity of holding educational training courses and programs for parents, helping them properly treat their children with ADHD in a way free of emotions and psychological pressures that negatively affect the child's psyche and decrease his self-confidence.
- The program must be continuously effective without stopping at a certain limit, because of the importance of applying this tool to parents, to be constantly aware of any new symptoms that their children might be exposed to and provide support for them.
- Using the means of communication by presenting videos that explain the strategies for activating the executive functions of the brain in children with ADHD.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Washington.

American Academy of Child & Adolescent Psychiatry& American Psychiatric Association (2013). Parents Medication Guide

American Academy of Child & Adolescent Psychiatry and American Psychiatric Association, (2013).Parents Medication Guide, Supported by the Elaine Schlosser Lewis Fund.

Abu-Ahmed I. (2017) *Managing disciplinary and behavioral problems in Arab community schools,* Maher Amer translation, Jerusalem, Palestine: digital for publication and distribution.

Al-Jaafara H. (2008) *Motor disorders of the child,* Osama House. Amman. Jordan.

Al-Khashrami S. (2004) *Educational and family therapy for ADHD,* Riyadh, Dar Al-Masmak for advertising.

Al-Qamish M and Al-Maayta K. (2007) *Emotional and behavioral disorders,* Jordan: Dar Al Masirah.

Al-Rababah A. (2015) Developing a Jordanian image of the Conners scale for estimating attention deficit disorder accompanied by hyperactivity. *Special Education and Rehabilitation Journal* 2.

Al-Saleh AR. (2015) *How do we deal with hyperactivity and distraction in children*. Available at: http://www.lahaonline.com/.

Barkley RA. (2020) *Taking charge of ADHD: The complete, authoritative guide for parents*: Guilford press.

Baum S, Owen S and Schader R. (2017) *To be gifted and learning disabled: Strength-based strategies for helping twice-exceptional students with LD, ADHD*: Sourcebooks, Inc.

Biederman J, Monuteaux MC, Mick E, et al. (2006) Young adult outcome of attention deficit hyperactivity disorder: a controlled 10-year follow-up study. *Psychological medicine* 36: 167.

Brown T. (2013) *A New Understanding of Attention Deficit Disorder*. Available at: http://www.brownadhdclinic.com.

Brown T. (2017) *A New Understanding of Attention Deficit Disorder*. Available at: http://www.brownadhdclinic.com.

Canestri J, Leuzinger-Bohleber M and Target M. (2018) *Early development and its disturbances: Clinical, conceptual and empirical research on ADHD and other psychopathologies and its epistemological reflections*: Routledge.

Chronis AM, Chacko A, Fabiano GA, et al. (2004) Enhancements to the behavioral parent training paradigm for families of children with ADHD: Review and future directions. *Clinical child and family psychology review* 7: 1-27.

Chu K, Li S, Chen Y, et al. (2012) Family dynamics in families with children with Attention Deficit Hyperactivity Disorder. *Shanghai archives of psychiatry* 24: 279.

Corcoran J, Schildt B, Hochbrueckner R, et al. (2017) Parents of children with attention deficit/hyperactivity disorder: A meta-synthesis, part I. *Child and Adolescent Social Work Journal* 34: 281-335.

Counts CA, Nigg JT, Stawicki JA, et al. (2005) Family adversity in DSM-IV ADHD combined and inattentive subtypes and associated disruptive behavior problems. *Journal of the American Academy of Child & Adolescent Psychiatry* 44: 690-698.

Editors A. (2018) *Impulse Control Strategies for School and Home*. Available at: https://www.additudemag.com.

Fernandez B, Tan-Mansukhani R and Essau CA. (2017) Emotion regulation and attention deficit hyperactivity disorder. *Emotion regulation and psychopathology in children and adolescents*: 113-128.

Franke N, Keown LJ and Sanders MR. (2016) An RCT of an online parenting program for parents of preschool-aged children with ADHD symptoms. *Journal of attention disorders*: 1087054716667598.

Garberm F and Smith M. (2003) *Behavior Training Helps ADHD Kids Symptomps, Parents Coping Skills*. Available at: https://www.webmd.com.

Goldstein S and Goldstein M. (1992) *Hyperactivity: why won't my child pay attention?*: Wiley.

Harazni L and Alkaissi A. (2016) The Experience of Mothers and Teachers of Attention Deficit/Hyperactivity Disorder Children, and Their Management Practices for the Behaviors of the Child a Descriptive Phenomenological Study. *Journal of Education and Practice* 7: 1-21.

Johnston C. (2015) *Attention deficit hyperactivity disorder*.

Klein M, Onnink M, van Donkelaar M, et al. (2017) Brain imaging genetics in ADHD and beyond–mapping pathways from gene to disorder at different levels of complexity. *Neuroscience & Biobehavioral Reviews* 80: 115-155.

Laukkanen J, Ojansuu U, Tolvanen A, et al. (2014) Child's difficult temperament and mothers' parenting styles. *Journal of Child and Family Studies* 23: 312-323.

Lindsay G. (2018) *Screening for children with special needs: multidisciplinary approaches*: Routledge.

Ma JL, Lai KY and Xia LLL. (2018) Treatment efficacy of multiple family therapy for Chinese families of children with attention deficit hyperactivity disorder. *Family process* 57: 399-414.

McIntyre R and Hennessy E. (2012) 'He's just enthusiastic. Is that such a bad thing?'Experiences of parents of children with Attention Deficit Hyperactivity Disorder. *Emotional and behavioural difficulties* 17: 65-82.

Mick E, Faraone SV, Biederman J, et al. (2004) The course and outcome of attention-deficit/hyperactivity disorder. *Primary Psychiatry*.

Muhammad AH. (2016) *Hyperactivity is a behavioral disorder that prevents the child from controlling his movement and controlling his attention*. Available at: https://alarab.co.uk.

Muñoz-Silva A, Lago-Urbano R, Sanchez-Garcia M, et al. (2017) Child/adolescent's ADHD and parenting stress: The mediating role of family impact and conduct problems. *Frontiers in psychology* 8: 2252.

Ng QX, Ho CYX, Chan HW, et al. (2017) Managing childhood and adolescent attention-deficit/hyperactivity disorder (ADHD) with exercise: a systematic review. *Complementary therapies in medicine* 34: 123-128.

Nour I. (2002) Maternity and Childhood Psychology. *Alexandria, University Youth Library*.

Nuri C, Akçamete G and Direktör C. (2019) The quality of life and stress levels in parents of children with attention deficit hyperactivity disorder. *European Journal of Special Education Research*.

Rebhi I. (2017) *How to deal with a child who is very mobile*. Available at: https://mawdoo3.com.

Ringer N, Wilder J, Scheja M, et al. (2020) Managing children with challenging behaviours. Parents' meaning-making processes in relation to their children's ADHD diagnosis. *International Journal of Disability, Development and Education* 67: 376-392.

Russell AE, Ford T, Williams R, et al. (2016) The association between socioeconomic disadvantage and attention deficit/hyperactivity disorder (ADHD): a systematic review. *Child Psychiatry & Human Development* 47: 440-458.

Saadat M. (2014) Attention deficit hyperactivity disorder (developmental learning disabilities). *Primary Network, Cairo*.

Schoeman R. (2017) *Attention Deficit Hyperactivity Disorder (ADHD)*. Available at: https://www.health24.com.

Shaaban H. (2017) Therapeutic strategies for Attention Deficit and Hyperactivity Disorder, and the recipe for brilliant success. *Beirut - Lebanon, Dar Al-Farabi for Publishing and Distribution*.

Shaw P, Eckstrand K, Sharp W, et al. (2007) Attention-deficit/hyperactivity disorder is characterized by a delay in cortical maturation. *Proceedings of the National Academy of Sciences* 104: 19649-19654.

Suzuki K, Kita Y, Kaga M, et al. (2016) The association between children's Behavior and Parenting of caregivers: a longitudinal study in Japan. *Frontiers in public health* 4: 17.

Tracey D. (2009) Working with children with Attention Deficit Hyperactivity Disorder (ADHD). *Extract from Putting Children First, the magazine of the National Childcare Accreditation Council (NCAC)*: 22-24.

Ungar M. (2020) *Working with children and youth with complex needs: 20 skills to build resilience*: Routledge.

Wender PH and Tomb DA. (2016) *ADHD: A guide to understanding symptoms, causes, diagnosis, treatment, and changes over time in children, adolescents, and adults*: Oxford University Press.
Wymbs BT, Pelham Jr WE, Molina BS, et al. (2008) Rate and predictors of divorce among parents of youths with ADHD. *Journal of consulting and clinical psychology* 76: 735.