



Research Paper

Counseling Practice Guideline for the Evaluation, Diagnosis, and Treatment of Attention-Deficit/ Hyperactivity Disorder for Children

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ABSTRACT

The present counseling practice guideline was prepared for the evaluation, diagnosis, and treatment of Attention-Deficit/ Hyperactivity Disorder for children, since it is one of the most common mental disorder which not only children but also parents, siblings, teachers and classmates are suffering from. There are eight keystone advices in the guideline for counselors, researchers, psychologists, parents, and healthcare services in order help them in understanding of ADHD evaluation, diagnosis and treatment for children who are between 4 to 17 years of age. The multi-level, scientific method was used to describe the evidence base literatures. The eight keystone advices are as following, respectively:

“Underlying factors of ADHD should be considered well to have wider perspective, during using different treatment approaches for ADHD children and to achieve maximum recovery”; “Comorbidity possibilities should be described well to increase recovery with ADHD children”; “Functional Impairments should be evaluated in detailed way during treatment of ADHD with children”; “Although psychological assessment of the diagnostic criteria for children with ADHD remains at the standard of health care, still there is a need for culturally adapted Psychological assessment tools to reach more sensitive diagnosis with better treatment”; “Side effects should be eliminated during the treatment of children with ADHD”; “The doses of medications should be titrated well if the medication is the latest choice for treatment of ADHD children to achieve maximum advantage with minimum antagonistic”; “At the beginning, children with ADHD should be treated without medication by using evidence-based adapted behavior therapies and other integrated methods, if these approaches alone do not provide significant treatment for children, then the small dosage of ADHD medications might be added to the treatment process”; and “Cultural treatments are the key points for well-being of ADHD children and combination of healthy dieting, traditional healing and effective therapies might lead the most effective treatment ever for children with ADHD”.

The present counseling guideline provide recommendations for experts like; development of consistent cultural instruments to assess the level of social impairment with ADHD children, studies on culturally based therapies and school-based treatments’ effectiveness.

Key Words: ADHD, children, evidence based cultural therapies, behavioral therapy, medication.

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Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurobehavioral (mental) disorder among children with persistence into middle age. It has a multifactorial anatomy. ADHD’s chronicity, if diagnosis is misused or overdue, may result with important negative impacts on the people’s general functioning and progress (Cabral, Liu, & Soares, 2020). To able to diagnose it following criterions need to be underlined;

Table 1: Symptoms of ADHD for children

Symptoms	How children with these symptoms might behave
Inattention	Daydreams, generally they have problem to pay attention
	They generally do not look like to listen
	They are distracted easily
	They often do not look like to care about fine points and involve in thoughtless faults
	They often do not follow an instruction or finish a task in organized way
	They often lose their important belongings
	They frequently forget stuffs
	They commonly evade doing tasks which need enduring mental exertion
Hyperactivity	They are in ongoing movement like “driven by a motor”
	They cannot wait seated
	They often fidget and wiggle
	They speak excessive
	They commonly jump, run and move up when it is banned
	They cannot play quietly
Impulsivity	They often talk and move rashly
	They might run into the street uncarefully
	They often have trouble with turns at talking
	They cannot stand by somethings
	They frequently shout out answers before the questions are completed
	They often bother other people

Adapted from American Academy of Pediatrics. (2016). *Understanding ADHD: Information for Parents About Attention-Deficit/Hyperactivity Disorder*.

First of all, ADHD symptoms should occur in two or more situations, like in school, home, and social area, and result with functional impairments. Then, children between age of 4 to 17 years, should show six or more symptoms, and these symptoms should cause functional impairment significantly in children’s daily life. Lastly, ADHD symptoms should have sustained for more than six months (American Academy of Pediatrics, 2016).

Scholars have discovered that ADHD in children costs socially and financially in which it has costed US\$13 billion a year in economic and social losses in Australia (Murdoch Childrens Research Institute, October 26, 2020). In the same time, most of the children with ADHD do not get their medicine consistently, they continue to live without treatment 40% of the time (Murdoch Childrens Research Institute, February 3, 2020). Also, ADHD causes increased risk for developing illnesses like Parkinson (University of Utah Health, September 12, 2018). On the other hand, Wiklund, Patzelt, and Dimov, (2016) interestingly, benefits of ADHD symptoms were found out in which these symptoms look like performances generally related with entrepreneurship and they foster important traits related with entrepreneurship which lead new experiences and show passion and steadfastness. However, that does not mean ADHD should not be treated since younger primary school children are the one who suffer more from this disorder (Sayal, Chudal, Hinkka-Yli-Salomäki, Joelsson, & Sourander, 2017).

Age Range

Children are defined as any human being under the age of 18 years so, the present guideline addresses the diagnosis and treatment of ADHD in children between 4 to 17 years of age (ACPF, 2013).

Scope

The present psychological interventions may benefit parents of children with hyperactive/ impulsive actions which do not meet diagnostic criteria for ADHD completely. Also, researchers, counselors, psychologists, schools and healthcare services may utilize from this guideline. In the present guidance, the

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-4) is used for the diagnosis of children with ADHD. Also, suggestions for children care, their treatment and parents are provided.

A Process of Care for Diagnosis and Treatment

The procedure of present guideline and process of care identifies evaluations, diagnoses, and treatments as a constant procedure and gives recommendations. Along with the general recommendations for evaluation, diagnosis, and treatment, it provides a single procedure to guide the counseling process.

About This Guideline

This guideline provides eight recommendations for the evaluation, diagnosis, and treatment of ADHD in children. These recommendations offer for reliable and quality care for children with ADHD and their families and fill some of the gaps related to this issue. As a note; It is known that some counselors might not feel confident of their ability to diagnose and treat children with ADHD successfully due to some factors like; coexisting circumstances, age of children or other problems. If counselors feel that they are not sufficiently competent or they are unclear about making diagnoses or completing the treatment, the referral to mental health professionals should be done.

I. METHODOLOGY

The multi-level, scientific method was used to describe the evidence base literature for diagnosis and treatment. Firstly, the researcher conducted scoping review of the literature through analytically searching literature with related descriptors, and formerly summed up the main findings of scientific journals that met the norms. In addition to this systematic analysis, for treatment it was used the review from the previous literatures on "ADHD, effectiveness of treatment in children and long-term effectiveness, diagnosis, and both classic and cultural treatments." This examination addressed numerous of key questions for the researchers, psychologists, counselors, parents, and healthcare services, together with the effectiveness of behavioral and cultural treatments and medications for children. The issue of diagnosis and treatment was focused on following zones:

1. ADHD reasons; What are the underlying factors of ADHD for children?
2. Comorbidity; What kind of the mental disorders co-occurs with ADHD?
3. Functional damages; What are the functional impairments of children with ADHD?
4. Assessments; Do psychological assessment of the diagnostic criteria for ADHD remain the standard of health care? How precise are psychological assessments tools in the diagnosis of ADHD (the psychometric properties)?
5. Side effects of the medicines; Are there significant side effects of ADHD medicine during treatment of children?
6. Medications; What is available new information concerning the long-term efficacy and safety of medications for the ADHD treatment? Exactly, what kind of information is obtainable on the safety and effectiveness of these medications for children?
7. Therapies; What is available information on the long-term safety and effectiveness of psychological interventions for the ADHD treatment for children? Exactly, what kind of information is obtainable on the safety and effectiveness of these interventions for children?
8. Cultural Treatments; Are there other evidence-based therapies which reach the level of attention?

Diagnosis and Treatment

To make a diagnosis of ADHD, the counselors should determine that Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-4) criteria have been met and information should be attained mainly from parents, teachers, guardians, and other school and mental health clinicians who involved in the children's care. The counselors should also rule out any alternative cause.

II. KEYSTONE ADVICES FOR ADHD EVALUATION, DIAGNOSIS, AND TREATMENT FOR CHILDREN

FIRST POINT: Underlying factors of ADHD should be considered well to have wider perspective, during using different treatment approaches for ADHD children and to achieve maximum recovery.

There are numerous underlying factors of ADHD symptoms in children like environmental, genetic, biochemical and physical factors before birth. Researchers found out that children who experience ecological and parental stressors, and traumatic experiences, like exposure to violence, poverty, and mental disease are more expected to be diagnosed with ADHD (Montefiore Health System, October 11, 2016). Also, common plastics chemicals like phthalates were investigated to cause ADHD symptoms. Toys, dolls, cleaning supplies, plastics, and personal care objects contain phthalates, and this problem causes hormonal troubles, reproductive problems, asthma and birth defects (Kim et al., 2009). Likewise, children who exposed to little amounts of lead

(environmental pollutants) and a common household pesticide may develop ADHD symptoms (Nigg, Elmore, Natarajan, Friderici, & Nikolas, 2015; and Richardson, 2015).

Latest studies showed that biochemical factors also play important role in contributing ADHD in children which they have almost 50 percentage less of a protein which is significant for learning and attention. Less amount of protein in the brain may demonstrate less production of serotonin. Therefore, so far, the focus was primarily on the indicator ingredients noradrenaline and dopamine in the medication. But then, serotonin should be added in the treatment of ADHD with children. (Expert answer, 2011, December 6).

Furthermore, physical brain injury in children amongst physical factors that lead to ADHD, which is different than genetic risks of the disorder (Stojanovski, 2018). Besides, researchers found out that, mothers who had high sugar and fat diet during their pregnancy had children who show ADHD symptoms (Rijlaarsdam et al., 2016). Also, children who experienced less oxygen during the birth and had exposed to high level of cotinine, were undoubtedly more expected to develop ADHD future in life as compared to others (Getahun et al., December 10, 2012; and Sourander, 2019). Similarly, higher level of "urinary fluoride" during pregnancy is linked with ADHD symptoms in children of school age. Dental goods, tap water, milk, table salt and many other products have been fluoridated by variable quantities for more than 60 years, unfortunately. This cause significantly inattentive behaviors and cognitive difficulties (Bashash et al, 2018).

Moreover, mothers who have low levels of body-regulating chemicals like thyroid during the first three months of pregnancy may affect the infant's brain development, which may lead ADHD in their children (Peltier, Fassett, Chiu, & Getahun, 2020). Also, ADHD risk was found 34% higher with children who have mothers with vitamin D deficiency during pregnancy (especially, during first and second trimesters) (University of Turku, February 10, 2020).

Additionally, there are significant genetic factors that lead ADHD in children in which 4 years old children with ADHD presented decreased brain volumes in areas that critical for controlling behavioral and they were more expected to have little parts of their DNA replicated or absent than others (Jacobson et al., 2018; and Williams et al., 2010). Also, it was found the general brain size and five of the area sizes were lesser in people with ADHD and these areas were the "caudate nucleus, putamen, nucleus accumbens, amygdala and hippocampus". These detected changes were most prominent in ADHD children's brains. (Radboud University Nijmegen Medical Centre, February 16, 2017). Ni, Amare, Zhou, Mills, Gratten, and Hong Lee, (2019) investigated genetic relationship between women reproductive characters and main psychiatric illnesses and they found the genetic risk of ADHD in children was significantly linked with early motherly age at "first birth" (particularly, younger than 20).

SECOND POINT: Comorbidity possibilities should be described well to increase recovery with ADHD children.

There are various mental disorders that coexist with ADHD in children in which trauma and ADHD every so often are seen together. According to AAP when children have problem to stay organized, focus on responsibilities, control their actions and sit still, they may be evaluated for ADHD directly (American Academy of Pediatrics, 2014, May 6). As well, in the evaluation of children with ADHD, professionals should involve assessments for further circumstances which might co-occur with ADHD, like oppositional defiant, conduct, anxiety and depressive disorders (as behavioral or emotional), language and learning and extra neurodevelopmental disorders (as developmental), and sleep apnea and tics, (as physical) (AAP, 2016). Also, sometimes, ADHD treatment find solution for the coexisting disorder like anxiety and oppositional defiant disorder anxiety. (The College Board, July 8, 2011).

THIRD POINT: Functional Impairments should be evaluated in detailed way during treatment of ADHD with children.

ADHD causes social and mental damages in children in which they experienced strong social and educational impairment (DuPaul, Chronis-Tuscano, Danielson, & Visser, 2018). Young children with symptoms of ADHD are found less expected than others to be prepared for school (Perrin, Heller, & Loe, 2019). Also, children with ADHD have more trouble falling asleep which they sleep more poorly compared to their peers (Virring, Lambek, Thomsen, Møller, & Jennum, 2016). Addition to that, DeCarlo, Swanson, McGwin, Visscher, and Owsley, (2016) investigated a bigger risk of ADHD amongst children with vision complications that are not amendable with contacts or glasses, like lazy eye and color blindness relative to others.

FOURTH POINT: Although psychological assessment of the diagnostic criteria for children with ADHD remains at the standard of health care, still there is a need for culturally adapted Psychological assessment tools to reach more sensitive diagnosis with better treatment.

To diagnose children with ADHD, experts have interview with parents, teachers and/or other related people with the children regarding ADHD matters. During this assessment before using psychometric tools to rule out conditions other than ADHD, experts might ask some tests such as eyesight, hearing, blood test for lead levels and thyroid problems, electrical brain activity, CT/MRI to see brain deformity and etc. Emser et al., (2018) found out that in diagnosis of ADHD children, with using both objective and subjective measures the conclusion is more accurate and sensitive (specify for children is .83).

In general, the specialist use APA guidelines to diagnose children with ADHD which consist of three types of illness (see Table 1) that inattentive, hyperactive-impulsive and combined (who have both inattentive and hyperactive-impulsive symptoms, more common than others.) Also, psychometric tools are used in evaluation part like the “Vanderbilt Assessment Scale” (consist of 55 questions to assess symptoms of ADHD and additional circumstances like anxiety, depression, CD, and ODD), the “Child Attention Profile” (CAP) (common symptoms of ADHD, teachers or parents fill it), “Behavior Assessment System for Children” (BASC) (it measures level of attention, hyperactivity, hostility, absence of crucial skills and problems of learning and conduct, anxiety and depression), “Child Behavior Checklist/Teacher Report Form” (CBCL) (addition to the previous tests, it assesses delinquent actions, withdrawal and physical troubles), and “Brain Wave Tests” (NEBA system which assesses waves of brain), (Bhandari, June 07, 2019).

According to AAP (2011), to make an accurate diagnosis for ADHD children, specialists should conclude that DSM-4 conditions met with reports of impairment in more than 1 main situation, and related information should be taken mainly from parents, teachers guardians, and other clinicians who involved in the children’s care and they should also rule out any other reasons.

FIFTH POINT: Side effects should be eliminated during the treatment of children with ADHD.

There are number of side effects of the ADHD stimulant medications that need to be removed like strong difficulties to fall asleep, having poorer quality of sleep and sleeping for shorter extends (University of Nebraska-Lincoln, 2015, November 23). Also, children with ADHD medications demonstrated reduced bone mass (American Academy of Orthopaedic Surgeons, 2016, March 3). Ritalin, Methylphenidates, and Dextroamphetamines which is known as stimulants for ADHD treatment are found to make addiction like cocaine addition to their strong side effects. Similarly, children who used these stimulants are found to have cocaine addiction later on in the USA and also % 60 percent of these children start to show symptoms of CD and ODD (Aidin, 2008).

SIXTH POINT: The doses of medications should be titrated well if the medication is the latest choice for treatment of ADHD children to achieve maximum advantage with minimum antagonistic.

Medication (stimulants) issue with ADHD children counties to be argumentative. There are two neurotransmitters (dopamine and norepinephrine) in the brain which are responsible for memory construction, the beginning of addictive actions, and awakening and concentration. ADHD stimulants increase them to eliminate the symptoms of patients. However, experts know little about functions of ADHD stimulants in which previous studies were mainly, on effect of high dosage stimulants that causes future impairments in attention and makes addiction. So, studies found out that to make better drugs for ADHD it is needed to target PFC’s (prefrontal cortex) neurotransmitters (University of Wisconsin-Madison, June 26, 2006). Moreover, according to AAP, (2011) ADHD medication is not suitable for children whose symptoms do not meet DSM-4 criteria for diagnosis and when it is necessary to prescribe medications for these children, the specialists have to titrate dosage to reach the highest advantage with the lowest antagonistic.

SEVENTH POINT: At the beginning, children with ADHD should be treated without medication by using evidence-based adapted behavior therapies and other integrated methods, if these approaches alone do not provide significant treatment for children, then the small dosage of ADHD medications might be added to the treatment process.

There are several treatment approaches for children with ADHD and amongst them are “cutting back on yelling”, verbal disapproval and further strict parenting styles, together with physical penalty, have the influence to calm ADHD children. Therefore, the researchers advised that parents should not be blamed for these behaviors but the solutions should be focused to help families and their children with ADHD (Bell, Shader, Webster-Stratton, Reid & Beauchaine, 2017). Still, ADHD children were found to do their tasks better in nature (University of Illinois at Urbana-Champaign, 2008, October 15). To improve their cognitive performance children should be given chance to move constantly and play (Hartanto, Krafft, Iosif, & Schweitzer, 2015).

Taylor and Ming Kuo, (2011) found out that children who habitually play in grassland with green like trees and leaves, have slighter symptoms of ADHD than those who play inside settings.

Scientists in University at Buffalo, (7 May, 2005) investigated that combination of medication and behavior therapy is the most productive way to develop the behavior of children with ADHD. Also, an interactive avatar that provides both directions and response on the concentration of the beginner, can progress the performance of these children on multifaceted problem-solving works (Fabio, Capri, Iannizzotto, Nucita, & Mohammadhasani, 2019). Also, youngsters with ADHD were observed to benefit from sleeping more to improve their concentration, regulation and design of emotions (APS, April 8, 2019).

There are new studies that provides clearer counseling on how schools can support children with ADHD to eliminate their symptoms and maximize their academic achievements in which Moore et al., (2018) suggested usage of “daily report cards” to maximize children's capability to control their feelings. In addition to that, ADHD children were found to be in need for clear explanation of orders and rewards for every condition, also when rewards are not existing any more, it has to be underlined well in order to improve their achievements (Alsop, Furukawa, Sowerby, Jensen, Moffat, & Tripp, 2016). Besides, extreme movements are common amongst children with ADHD and these energetic actions were found to improve their remembrance of information and exercises in multifaceted cognitive tasks. This demonstrates long time methods are not suitable for ADHD children (Sarver, Rapport, Kofler, Raiker, & Friedman, 2015).

Moreover, specialists need to know that ADHD is a continuing disorder, so, children with ADHD should be considered as children who need appropriate health care. According to AAP (2011), management of these children should follow the steps of medical home and the chronic care model. Likewise, treatment of ADHD children differs based on the client's age. For children 4 to 5 years of age, in the beginning, the specialists should provide behavior therapy (parent and/or teacher) and may suggest “methylphenidate” if the behavioral therapy do not specify important development and there is an average to serious ongoing trouble in the children's function. For children 6 to 11 years of age, the specialists should suggest suitable medications and/or behavior therapy (parent and/or teacher) as treatment for ADHD (AAP, 2011).

EIGHTH POINT: Cultural treatments are the key points for well-being of ADHD children and combination of healthy dieting, traditional healing and effective therapies might lead the most effective treatment ever for children with ADHD.

Before mentioning about Muslim cultural treatments for children with ADHD, it is better to mention about recent studies which talk about importance of dieting style for ADHD children. Johnson, Wilson, Bland, and Lanaspá, (2020) found excessive sugar intake cause ADHD and bipolar symptoms and aggressive actions as well. Besides, omega-3 intake is investigated to decrease ADHD symptoms (Dervola et al., 2012). Also, the Mediterranean dieting style might be one of the best additional treatment for children with ADHD (Ríos-Hernández, Alda, Farran-Codina, Ferreira-García, & Izquierdo-Pulido, 2017). Likewise, infants are found to have fewer ADHD symptoms whose mothers got vitamin D sufficiently during their pregnancy (Mossin, Aaby, Dalgard, Lykke-degn, Christesen, & Bilenberg, 2016).

As cultural treatments for ADHD children, Aidin (2008) who was a medical doctor, focused on holistic medicine. In other words, she believes that in order to treat patients in the most effective way the specialists have to look at from the all perspectives. Aidin in her Turkish book which is titled as “real medicine”, focused on the treatment of ADHD from both western and Islamic perspectives (based on the Qur'an and Hadith). She mentioned that more than 70% percent of children with ADHD experience depression and feeling of scaredness and most of these children have addiction of ADHD stimulants. She highlights main reasons of ADHD based on scientific variables as; added substances, synthetic oxytocin (especially during abdominal delivery), lead poisoning, iron deficiency/excess, deficiency of obligatory fatty acids, antiepileptic drugs, and excessive TV watching and playing computer games. Likewise, for the treatment of ADHD, children need to have natural diet, fast, cup, learn foreign languages, and read and write the Qur'anic verses. Too, massaging the children's head with olive or black cumin oil with adding a few drops of rose oil through forty days was found effective for ADHD children as additional treatment.

BEHAVIORAL THERAPY FOR ADHD CHILDREN

The researchers have discovered most of the preschool children with ADHD get benefits from behavioral therapy (BT) alone. These programs are characteristically work in the system of “group parent training programs” (Greenhill, Kollins, Abikoff, McCracken, Riddle, & Swanson, 2006). Also, positive effects of BT increase when it was combined with ADHD medications (AAP, 2011).

BT characterizes a comprehensive group of detailed interventions which have common goals of adjusting the social and physical setting to change behavior. BT usually is applied by educating parents in particular methods which makes their skills better to adjust and shape their children's behaviors and to make the children's skills better to control their behavior. This education consists methods to more sufficiently give rewards

(prizes) when their children shows the wanted behavior, acknowledge what kind of behaviors can be eradicated via intentional ignoring or via praising as a dynamic tactic, or give suitable punishments when their children are unsuccessful to achieve the aims. It is necessary to steadily give prizes and punishments as goals are attained and at that point, to progressively increase the expectations for each goal as they become skilled at to form behaviors.

The long-term effectiveness of BT has yet to be resolved. Continuing loyalty to behavior programs may be important; so, to provide long-term effects for children health a “chronic care model” should be applied (Van Cleave & Leslie, 2008). Additionally, families and teachers of ADHD children were meaningfully more pleased with the treatment design which were providing both BT and medications. Finally, the mixture of BT and management of medication admitted for the use of lesser dosages of drugs, which probably minimized the risk of side effects (AAP, 2011).

There are numerous evidence-based BT for ADHD children and amongst them Behavioral parent training (BPT), Behavioral classroom management (BCM), and Behavioral peer interventions (BPI), (AAP, 2011). BPT is providing behavior alteration principles to parents who have children with ADHD to implement in home environment. It is found to improve understandings of parents on behavioral principles, obedience to commands of parents, and satisfaction of parents with high levels. BCM is also providing behavior alteration principles to teachers of children with ADHD to implement in classroom environment. It is found to improve work productiveness, concentration to directions, obedience to rules of school and reduced disturbing behaviors. Lastly, BPI is a group-based approach which focus on peer (coequal) relationships and, weekly, provides clinical based trainings of social skills that is used alone or parallel with BPT and/or ADHD medication (Pelham & Fabiano, 2008).

Moreover, a classic BPT sessions’ order is firstly, a clinical behavioral intervention, then respectively, parent training on; examination of children’s condition, theory of social learning, and management of behavioral principles, creating a school and/or home daily-report-card and behavior checklist, and rewarding in school and home, joining to proper behaviors and ignoring negligible, improper behavior, giving operative instructions and warnings, creating and applying “rules/When...then” possibilities, time-out dealings, “home point system-reward and response cost”, applying possibilities at outdoor like preparation for disobedience at outdoor, skills for problem-solving and lastly, perpetuation of the program weekly after the end of therapist connection. By way of ADHD is linked with damages in several areas, treatment practices generally, consist extra components, like BCM to refer social and academic functioning in the school backgrounds, skills for social training or concentrated summer treatment programs to refer relationships with peer (BPI), and medication (Chronis-Tuscano et al., 2004).

As school programming and supports, coordination of BT programs through home and schools might increase therapy’s effectiveness for children with ADHD. Classroom adjustments, like adapted homework, primary seats, and test adjustments, may be provided by school programs. It is important for counselors to have knowledge about the suitable standards of ADHD children’s state and school region to guide families and teachers (The College Board, July 8, 2011). Education of parents is also critical in treatment of ADHD since they are challenged through ADHD symptoms of their children (Bodenheimer, Wagner, & Grumbach, 2002). Also, parents and children should be aware by experts about medication management and dose which might take some months to accomplish maximum success (Jensen et al., 2001).

III. CONCLUSION

Scientific evidences remain to be somewhat understandable with respect to the ADHD diagnosis (suitable diagnostic criteria and processes), comorbidity issues, behavioral and pharmacological treatments. Yet, combination of suitable cultural and behavioral treatments and accomplishing effective long-term results continues as the stages required to be taken which is challenging. The counselors who want to provide more detailed treatment for ADHD children should take the presents steps in order to achieve optimal treatment.

IV. RECOMMENDATIONS FOR FUTURE STUDIES

There are several explicit research areas related to the ADHD diagnosis, treatment and difficulties of developmental differences for well-being of children need to be discovered, like;

- Development of consistent cultural instruments appropriate for using in primary care to assess the level of social impairment with ADHD children,
- Study of culturally based therapies used by psychologists/counselors,
- Evaluation of the numerous school-based treatments’ efficacy,
- Development approaches for parents and children in their personal care,
- Standardized psychometric tools for helping experts in classifying comorbidity,
- Enhanced communication methods with mental health experts and school authorities and further public/private agencies, to deliver effective collective care for ADHD children.

REFERENCES

- [1]. Aidin, S. (2008). Gerçek Tıp;Yitik Şifanın İzinde. Yitik Şifa, 289-294 pp., İstanbul, Türkiye.
- [2]. Alsop, B., Furukawa, E., Sowerby, P., Jensen, S., Moffat, C., & Tripp, G. (2016). Behavioral sensitivity to changing reinforcement contingencies in attention-deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry*; DOI: 10.1111/jcpp.12561
- [3]. American Academy of Orthopedic Surgeons. (2016, March 3). ADHD medications associated with diminished bone health in kids: Physicians should address risk, preventative strategies to avoid long-term consequences of low-bone density. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2016/03/160303083812.htm
- [4]. American Academy of Pediatrics. (2014, May 6). Study finds ADHD and trauma often go hand in hand. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2014/05/140506074719.htm
- [5]. American Academy of Pediatrics. (Updated 6/2016). Understanding ADHD: *Information for Parents About Attention-Deficit/Hyperactivity Disorder*. Retrieved from: <https://www.healthychildren.org/English/health-issues/conditions/adhd/Pages/Diagnosing-ADHD-in-Children-Guidelines-Information-for-Parents.aspx>
- [6]. American Physiological Society. (April 8, 2019). More sleep may help teens with ADHD focus and organize: Study is first to find executive functioning skills deteriorate with lack of sleep. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2019/04/190408081816.htm
- [7]. Bell, Z.,Shader, T., Webster-Stratton, C., Reid, M.J., &Beauchaine, T.P. (2017). Improvements in Negative Parenting Mediate Changes in Children's Autonomic Responding Following a Preschool Intervention for ADHD. *Clinical Psychological Science*; 216770261772755 DOI: 10.1177/2167702617727559
- [8]. Bhandari, S. (June 07, 2019). ADHD Tests.MD. Retrieved from: <https://www.webmd.com/add-adhd/childhood-adhd/adhd-tests-making-assessment>Bodenheimer, T., Wagner, E.H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *JAMA*; 288:1775-1779.
- [9]. Cabral, M., Liu, S., & Soares, N. (2020). Attention-deficit/hyperactivity disorder: diagnostic criteria, epidemiology, risk factors and evaluation in youth. *Translational pediatrics*, 9(Suppl 1), S104-S113. <https://doi.org/10.21037/tp.2019.09.08>
- [10]. Chronis-Tuscano, Andrea & Chacko, Anil & Fabiano, Gregory & Wymbs, Brian & Pelham, William & Chornis-Tuscano, Andrea. (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. 10.1023/B:CCFP.0000020190.60808.a4.
- [11]. DeCarlo, D.K., Swanson, M., McGwin, G.,Visscher, K., & Owsley, C. (2016). ADHD and Vision Problems in the National Survey of Children's Health. *Optometry and Vision Science*; 1 DOI: 10.1097/OPX.0000000000000823
- [12]. Dervola, K.S. et al. (2012). Marine omega-3 polyunsaturated fatty acids induce sex-specific changes in reinforcer-controlled behaviour and neurotransmitter metabolism in a spontaneously hypertensive rat model of ADHD. *Behavioral and Brain Functions*, 8 (1): 56 DOI: 10.1186/1744-9081-8-56
- [13]. DuPaul, G.J., Chronis-Tuscano, A., Danielson, M.L., & Visser, S.N. (2018). Predictors of Receipt of School Services in a National Sample of Youth With ADHD. *Journal of Attention Disorders*; 108705471881616 DOI: 10.1177/1087054718816169
- [14]. Emser, Theresa & Johnston, Blair & Steele, J. & Kooij, Sandra & Thorell, Lisa & Christiansen, Hanna. (2018). Assessing ADHD symptoms in children and adults: Evaluating the role of objective measures. *Behavioral and Brain Functions*. 14. 10.1186/s12993-018-0143-x.
- [15]. Expertanswer (Expertsvar in Swedish). (2011, December 6). New biochemical changes found in children with ADHD. *ScienceDaily*. Retrieved November 2, 2020 from www.sciencedaily.com/releases/2011/12/111205102305.htm
- [16]. Fabio, R.A., Capri, T., Iannizzotto, G., Nucita, A., & Mohammadhasani, N. (2019). Interactive Avatar Boosts the Performances of Children with Attention Deficit Hyperactivity Disorder in Dynamic Measures of Intelligence. *Cyberpsychology, Behavior, and Social Networking*; 22 (9): 588 DOI: 10.1089/cyber.2018.0711
- [17]. Getahun, D., Rhoads, G.G., Demissie, K., Shou-En Lu, Quinn, V.P., Fassett, M.J., Wing, D.A., & Jacobsen, S.J. (December 10, 2012). In Utero Exposure to Ischemic-Hypoxic Conditions and Attention-Deficit/Hyperactivity Disorder. *Pediatrics*; DOI: 10.1542/peds.2012-1298
- [18]. Greenhill L, Kollins S, Abikoff H, McCracken J, Riddle M, Swanson J. (2006). Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. *J Am Acad Child Adolesc Psychiatry*, 45(11): 1284 -1293
- [19]. Hartanto, T.A., Krafft, C.E., Iosif, A.M., & Schweitzer, J.B. (2015). A trial-by-trial analysis reveals more intense physical activity is associated with better cognitive control performance in attention-deficit/hyperactivity disorder. *Child Neuropsychology*; 1 DOI: 10.1080/09297049.2015.1044511
- [20]. Jacobson, L.A., Crocetti, D.A., Dirlikov, B., Slifer, K., Denckla, M.B., Mostofsky, S.H., & Mahone, E.M. (2018). Anomalous Brain Development Is Evident in Preschoolers With Attention-Deficit/Hyperactivity Disorder. *Journal of the International Neuropsychological Society*; DOI: 10.1017/S1355617718000103
- [21]. Jensen, P., Hinshaw, S.P., Swanson, J.M. et al. (2001). Findings from the NIMH multimodal treatment study of ADHD (MTA): implications and applications for primary care providers. *J Dev Behav Pediatr*.22(1):60 -73
- [22]. Johnson, R.J., Wilson, W.L., Bland, S.T., Lanasp, M.A. (2020). Fructose and uric acid as drivers of a hyperactive foraging response: A clue to behavioral disorders associated with impulsivity or mania? *Evolution and Human Behavior*; DOI: 10.1016/j.evolhumbehav.2020.09.006
- [23]. Kim et al. (2009). Phthalates Exposure and Attention-Deficit/Hyperactivity Disorder in School-Age Children. *Biological Psychiatry*; 66 (10): 958 DOI: 10.1016/j.biopsych.2009.07.034
- [24]. Montefiore Health System. (October 11,2016). Family stressors and traumatic childhood experiences linked to ADHD diagnoses in children. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2016/10/161011130010.htm
- [25]. Moore, D. et al. (2018). School-based interventions for attention-deficit/hyperactivity disorder: a systematic review with multiple synthesis methods. *Review of Education*; <https://doi.org/10.1002/rev3.3149>
- [26]. Morteza Bashash et al. (2018). Prenatal Fluoride Exposure and Attention Deficit Hyperactivity Disorder (ADHD) Symptoms in Children at 6-12 Years of Age in Mexico City. *Environment International*.
- [27]. Mossin, M.H., Aaby, J.B., Dalgard, C., Lykkedegn, S., Christesen, H.T., & Bilenberg, N. (2016). Inverse associations between cord vitamin D and attention deficit hyperactivity disorder symptoms: A child cohort study. *Australian & New Zealand Journal of Psychiatry*; DOI: 10.1177/0004867416670013
- [28]. Murdoch Childrens Research Institute. (February 3, 2020). Kids diagnosed with ADHD often don't take medication regularly. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2020/02/200203104447.htm
- [29]. Murdoch Childrens Research Institute. (October 26, 2020). Personal and financial costs of ADHD. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2020/10/201026095419.htm
- [30]. Ni, G., Amare, A.T., Zhou, X., Mills, N., Gratten, J., & Hong Lee, S. (2019). The genetic relationship between female reproductive traits and six psychiatric disorders. *Scientific Reports*; 9 (1) DOI: 10.1038/s41598-019-48403-x

- [31]. Nigg, J.T., Elmore, A.L., Natarajan, N., Friderici, K.H., & Nikolas, M.A. (2015). Variation in an Iron Metabolism Gene Moderates the Association Between Blood Lead Levels and Attention-Deficit/Hyperactivity Disorder in Children. *Psychological Science*; DOI: 10.1177/0956797615618365
- [32]. Peltier, M.R., Fassett, M.J., Chiu, V.Y., & Getahun, D. (2020). Maternal Hypothyroidism Increases the Risk of Attention-Deficit Hyperactivity Disorder in the Offspring. *American Journal of Perinatology*, DOI: 10.1055/s-0040-1717073
- [33]. Perrin, H.T., Heller, N.A., Loe, I.M. (2019). School Readiness in Preschoolers With Symptoms of Attention-Deficit/Hyperactivity Disorder. *Pediatrics*; e20190038 DOI: 10.1542/peds.2019-0038
- [34]. Richardson, J.R. et al. (2015). Developmental pesticide exposure reproduces features of attention deficit hyperactivity disorder. *The FASEB Journal*; DOI: 10.1096/fj.14-260901
- [35]. Radboud University Nijmegen Medical Centre. (February 16, 2017). Brain differences in ADHD. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2017/02/170216105919.htm
- [36]. Rijlaarsdam, J., Cecil, C.A.M., Walton, E., Mesirow, M.S.C., Relton, C.L., Gaunt, T.G., McArdle, W., & Barker, E.D. (2016). Prenatal unhealthy diet, insulin-like growth factor 2 gene (IGF2) methylation, and attention deficit hyperactivity disorder symptoms in youth with early-onset conduct problems. *Journal of Child Psychology and Psychiatry*; DOI: 10.1111/jcpp.12589
- [37]. Ríos-Hernández, A., Alda, J.A., Farran-Codina, A., Ferreira-García, E., & Izquierdo-Pulido, M. (2017). The Mediterranean Diet and ADHD in Children and Adolescents. *Pediatrics*; 139 (2): e20162027 DOI: 10.1542/peds.2016-2027
- [38]. Sarver, D.E., Rapport, M.D., Kofler, M.J., Raiker, J.S., Friedman, M.L. (2015). Hyperactivity in Attention-Deficit/Hyperactivity Disorder (ADHD): Impairing Deficit or Compensatory Behavior? *Journal of Abnormal Child Psychology*; DOI: 10.1007/s10802-015-0011-1
- [39]. Sayal, K., Chudal, R., Hinkka-Yli-Salomäki, S., Joelsson, P., & Sourander, A. (2017). Relative age within the school year and diagnosis of attention-deficit hyperactivity disorder: a nationwide population-based study. *The Lancet Psychiatry*; DOI: 10.1016/S2215-0366(17)30394-2
- [40]. Sourander, A., et al. (2019). Prenatal Cotinine Levels and ADHD Among Offspring. *Pediatrics*; e20183144 DOI: 10.1542/peds.2018-3144
- [41]. Stojanovski, S., et al. (2018). Polygenic Risk and Neural Substrates of Attention-Deficit/Hyperactivity Disorder Symptoms in Youths With a History of Mild Traumatic Brain Injury. *Biological Psychiatry*; DOI: 10.1016/j.biopsych.2018.06.024
- [42]. Taylor, A.F., & Ming Kuo, F.E. (2011). Could Exposure to Everyday Green Spaces Help Treat ADHD? Evidence from Children's Play Settings. *Applied Psychology: Health and Well-Being*; DOI: 10.1111/j.1758-0854.2011.01052.x
- [43]. The African Child Policy Forum (ACPF). (2013). Definition of the International/Regional Legal Framework. Retrieved from: <http://www.africanchildforum.org>.
- [44]. The College Board. Services for Students with Disabilities (SSD). (July 8, 2011). Retrieved from: www.collegeboard.com/ssd/student. University at Buffalo. "Medication Combined with Behavior Therapy Works Best for ADHD Children, Study Finds". (7 May, 2005). *ScienceDaily*., 7 May 2005. Retrieved from: www.sciencedaily.com/releases/2005/05/050506155008.htm
- [45]. University of Illinois at Urbana-Champaign. (2008, October 15). A Walk In The Park Improves Attention In Children With ADHD. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2008/10/081015120742.htm
- [46]. University of Nebraska-Lincoln. (2015, November 23). Children who take ADHD medicines have trouble sleeping, new study shows: Study addresses decades of conflicting evidence of meds' effect on sleep. *ScienceDaily*. Retrieved November 2, 2020 from www.sciencedaily.com/releases/2015/11/151123202819.htm
- [47]. University of Turku. (February 10, 2020). Vitamin D deficiency during pregnancy connected to elevated risk of ADHD. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2020/02/200210104120.htm
- [48]. University of Utah Health. (September 12, 2018). ADHD may increase risk of Parkinson's disease and similar disorders. *ScienceDaily*. Retrieved November 1, 2020 from www.sciencedaily.com/releases/2018/09/180912081217.htm
- [49]. University of Wisconsin-Madison. (2006, June 26). Study Reveals How ADHD Drugs Work In Brain. *ScienceDaily*. Retrieved November 2, 2020 from www.sciencedaily.com/releases/2006/06/060626091749.htm
- [50]. Van Cleave J, Leslie LK. Approaching ADHD as a chronic condition: implications for long-term adherence. *J Psychosoc Nurs Ment Health Serv*. 2008;46(8):28–36
- [51]. Viring, A., Lambek, R., Thomsen, P.H., Møller, L.R., & Jennum, P.J. (2016). Disturbed sleep in attention-deficit hyperactivity disorder (ADHD) is not a question of psychiatric comorbidity or ADHD presentation. *Journal of Sleep Research*; DOI: 10.1111/jsr.12377
- [52]. Wiklund, J., Patzelt, H., & Dimov, D. (2016). Entrepreneurship and psychological disorders: How ADHD can be productively harnessed. *Journal of Business Venturing Insights*; 6: 14 DOI: 10.1016/j.jbvi.2016.07.001
- [53]. Williams, N.M. et al. (2010). Rare chromosomal deletions and duplications in attention-deficit hyperactivity disorder: a genome-wide analysis. *Lancet*; DOI: 10.1016/S0140-6736(10)61109-9
- [54]. Wolraich, M.L. (1997). Diagnostic and Statistical Manual for Primary Care (DSM-PC) Child and Adolescent Version: design, intent, and hopes for the future. *J Dev Behav Pediatr*, 18(3) 171-172. doi:10.1097/00004703-199706000-00006. PMID: 9213233.