

Neurofeedback

A non drug treatment of Attention Deficit/Hyperactivity Disorder

B H N Yasmeen¹

Editorial

Attention Deficit/Hyperactivity Disorder (ADHD) is characterized by persistent symptoms of inattention or inattention in combination with hyperactivity and impulsivity. It exists in all countries and cultures and its prevalence may be up to one in four of the child population.¹ The severity of these symptoms and its enduring nature are known to impair a person's capacity to effectively function.

At the present time, ADHD is not curable; it is manageable. Because of rapid improvements in attention and reduced hyperactivity, many children with ADHD have been treated with drugs-stimulants.² However, improvements in social and academic skills following stimulant treatment have not been reported.³ In addition, concerns with the benefits and side effects of long-term stimulant treatment have also been noted.⁴

In the last few decades many clinical trials have found that a newer treatment modality, Neurofeedback (NF) also effectively treats the symptoms of ADHD.⁵

Neurofeedback - also known as EEG Biofeedback - is an ADHD treatment procedure in which individuals learn to alter their typical EEG pattern to one that is consistent with a focused, attentive state. This is done by collecting EEG data from individuals as they focus on stimuli presented on a computer screen. Their ability to control the stimuli, for example, keeping the smile on a smiley face or keeping a video playing, is contingent on maintaining an EEG state consistent with focused attention. Neurofeedback proponents argue that this ability generalizes to real world situations and results in better attention during academic and related tasks.

Children with ADHD have higher rates of EEG abnormalities compared to children without ADHD, such as higher theta wave rhythms (drowsiness), lower sensorimotor rhythms (movement control), and lower beta waves (attention and memory processes).⁶ Neurofeedback provides audio and visual interpretations of these brain waves, and

children learn how to maintain the appropriate levels for functioning. The goal of the NF treatment was to enhance beta and depress theta activity.⁷

During a neurofeedback session, EEG sensors are situated on the scalp of the patient. Specific brain wave activity is then detected, amplified, and recorded. The information is instantaneously fed back to the therapist and client on a screen. The therapist informs the client what they are observing, and trains them on how to control the brain activity so that it reaches the desired range. With the help of a video game program, the child learns to maintain low activity of the delta waves and an increase in beta waves, or the game will not continue to play. With this, the child exercises the brain and increases his focus and attention. Ultimately with repeated practice sessions, (e.g 40 minute session 3 times per week over 10 weeks, i.e.30 sessions or 30 minutes/session provided over 20 weeks) trainees become more readily able to produce "healthier" brainwaves and alleviating their symptoms. Once learned and solidified in training, the ability to access these productive patterns of brain activity generalises to everyday life, with changes in most cases being permanent.

Anecdotal research shows neurofeedback may be a potentially useful intervention for a range of brain-related conditions. It has been used for ADHD,⁸ anxiety/depression,⁹ autism,¹⁰ epilepsy,¹¹ headaches,¹² Sleep problems,¹³ and other causes.

Many clinical trials have found that neurofeedback effectively treats the symptoms of ADHD.⁵ The effects of NF have been described as improved attention, decreased hyperactivity, and increased academic and social skills.^{1,8} Fuchs and Lubar suggested that introduce NF as a treatment option for children with ADHD whose parents favored a non-pharmacological treatment.^{14,15}

Neurofeedback participants made more prompt and greater improvements in ADHD symptoms, which were sustained at the 6-month follow-up, than those in the control group. This finding

¹Dr. B H Nazma Yasmeen
MBBS, MCPS, MD (Paed)
Editor
Northern International
Medical College Journal

Associate Professor
Dept. of Paediatrics
Northern International
Medical College, Dhaka
email :
drnazmayasmeen @ yahoo. com

suggests that neurofeedback is a promising attention training treatment for children with ADHD. In 1995 Alhambra, Fowler and Alhambra in a controlled study, comparing neurofeedback to other treatments for ADHD showed that after 30 sessions of neurofeedback, 16 of 24 patients taking medications were able to lower their dose or discontinue medications totally. No serious adverse side effects from neurofeedback have been reported.¹⁶

Monastra VJ, Monastra DM and George (2002) studied 100 children with ADHD receiving Ritalin, parent counseling and academic support. 50 children also received neurofeedback. While all children improved on the Test of Variables of Attention (TOVA) and an Attention Deficit Evaluation Scale (ADDES) while taking Ritalin, only those who had NF sustained those improvements after discontinuing Ritalin.⁴ However, in some other studies have only found improvements in attention¹⁷ and two studies with large sample sizes did not find significant improvements in core ADHD symptoms.^{4,18}

Therefore it is found that NF for ADHD has been controversial for many years, research support for this treatment is growing. In fact, in October, 2012 the American Academy of Pediatrics rated neurofeedback as a Level 1 "Best Support" Intervention for ADHD; this is the highest possible rating and at the same level as medication treatment and behavior therapy.¹⁹

Recently a few number of Paediatricians started practicing Neurofeedback therapy in the treatment of ADHD in our country. Hope in the near future we will get a result of our population in this regard.

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