

Multi-dimensional Intervention Model Study on Attention Deficit Hyperactivity Disorder (ADHD) Population

Sujithra Srinivas*, Aishwarya. S**

*(Bio medical engineering, Anna University, and Chennai
Email: sujithraasrinivas@gmail.com

** (Department of Physiotherapy, Vels University, and Chennai
Email: aishwarya1123@yahoo.com

Abstract:

Attention deficit hyperactivity disorder (ADHD) is one of the mental disorder experienced by children worldwide. ADHD when not treated at the childhood it can also exacerbate through the adulthood. Some of the symptoms includes hyperactivity, poor attention and impulsivity typical in children with Attention deficit hyperactivity disorder (ADHD). Occupational therapy is one of the most focused interventions for children with ADHD, the therapy techniques focus on play skills, sensory integrations, cognitive skills and motor functions. Moreover the occupational therapy interventions yield progressive results but however there were few limitations that has to be considered in terms of study design, interventional techniques used and the desired outcome measures. In this study occupational multi-dimensional model of practice is used as the primary intervention, which uses a multi-dimensional analysis and understanding of Attention deficit hyperactivity disorder (ADHD) and efficient management technique. The framework of the study was altered according to the specific co conditions experienced by the children in the study .The clinical study was carried out with occupational therapists with proper clinical analysis and study date was collected based on previous neurological condition of the children involved in the study. The analysis was carried out in three particular levels that include neurological level, psychological level and behavioral level.

Keywords —Attention deficit hyperactivity disorder (ADHD), sensory integrations, cognitive skills, motor functions, and occupational therapy.

I. INTRODUCTION

ADHD is neuropsychiatric disorder which affects kids in their developmental stage. The kids with ADHD show relatively high impulsivity, over action and inattention which cause significant problems in their social and education. [1] There are various secondary therapy that help children overcome neuropsychiatric disease, but in the recent past the focus has shifted towards intervention therapy which as significant results when applied with a particular frame work with respect to the individual's requirement. Studies

suggest occupational therapy as one of the most efficient mechanism used in interventional therapies.[2-7] A good multi-dimensional model elaborates about the guidelines on various parameters of assessment such as (1) what to assess (2) how to assess, and (3) the outcomes of treatment with intervention procedures. Thus, a multi - dimensional model explains a cluster phenomenon and practice guidelines which is more specific to individual diagnosis and treatment models. Although the guidelines of the occupational therapy are primarily based on clinical diagnosis, cognitive and behaviour based, while many components of

the assessment and treatment are useful for the practice. Some of which encloses behavioural and cognitive assessment, psychological assessment based on educational activities which is useful for both parents and children which mainly focuses on behavioural management. In order to combine the use of each component in the framework with specific intervention and evaluation procedure in occupational therapy for children with ADHD, Occupational therapists need to record and observe all relevant diagnostic information and frame them with an occupational therapy model for efficient practice. The development of an effective model can be beneficial for children with ADHD, so that it will guide the therapists to design an evaluation and intervention techniques that can also help a multidisciplinary team.

II. THEORIES ON NEUROLOGICAL BASIS OF ADHD

The information perception of a child is greatly influenced by their environments, parents and tasks with different level of functionality that is behavioural, neurological and psychological. [7, 9, 11]. There are evidence based theories which have neurological basis in children with ADHD, there is significant roles played by the dopamine pathway and frontal-basal ganglia which is impaired in function which caused major problem in attention inhibition and behavioural control [12-15]. The brain functioning is a whole process which requires the cortical process to sensory functioning that happens in the lower subcortical level and these subcortical functions are dependent on cortical functioning for sensory integration and information processing. [16,17] The neurologic basis of ADHD, uses the prefrontal-subcortical connections. The frontal lobes, thalamus and basal ganglia forms a synaptic loop or pathway which is responsible for action and inhibition, ascending and descending pathways. [20, 21] This conceptual analysis proves that the three levels of functions and dysfunction as inter dependent components in explaining the neurological concepts of ADHD.

The model address the need for assessment tools to assess the primary behavioural features of children with ADHD and identify the various

neurological and psychological collation for the present behaviour. However, the practice model promotes the needs for neurological, psychological and behavioural strategies to aid performance and promote different interventional therapy. [21,22] In some cases children with ADHD exhibit better self-control, behaviour and improved performance when in a calm atmosphere, while structured tasks, well-defined outcomes and positive reinforcement help in achieving for appropriate behaviour. [15, 16, 17].

A. Multidimensional evaluation of children with ADHD

Multidimensional evaluation is an important criteria due to many signs and symptoms of other neurological conditions that resemble the ADHD clinical diagnosis. Therefore, it is important to make a multiple diagnosis to identify assisted conditions when evaluating in ADHD population. Fig. 1 Sensory modulation therapy is to regulate and organize the nature of responses and intensity to sensory input in an evaluated and adaptive manner, which can help in attaining a range of performance and accustom adaptation to be maintained [14] Sensory dysfunctions have adverse impacts on a children behavioural traits, like arousal, action, reactions and attention. [15,16] Children with ADHD tend to show a pattern of sensory seeking traits that interrupts their behaviour, cognitive and social behaviour with respect to various occupations and environment. Apart from using the ADHD scale for measurement, a semi structured evaluation was conducted which involved the interactive community, parents, teachers and the child. Thus this structure ideally suggests observational assessment helps in identifying behavioural and psychosocial skills which interact with the child in the environment he/she is in.

III. METHOD

The Research methodology used is a cross-sectional research method. Survey research is a special type of quantification research. It is aimed towards finding out the characteristics of a well-defined group of people with clinical diagnosis of ADHD. The study was conducted in NIEPMD – National

institute for empowerment with multiple disabilities. The study involves volunteers between 8-12 years with inclusion criteria of clinical diagnosed ADHD with typical symptoms of hyperactivity, inattention and impulsivity. The research method is carried out based on the multi-dimensional framework which assesses the study on three levels: neurological, psychological and behavioural. The outcomes of the study are fixed based on the initial diagnosis and capabilities of the children. The research methods were clinical supervised by the occupational therapist on every assessment and test. The data collection procedure sessions lasted 1 hour on the pre and post-test with children being monitored for 3 months of their systematic occupational therapy which was designed according to their lack and delay.

B. Assessing task performance

The assessment is carried out to find the functional skills and perceptual-motor skills which present adequate information about the functional and dysfunction impacts of ADHD and related conditions at different tasks and engagement. Information gathered for these areas are used for evaluation which can help in making differential diagnosis and identify other comorbidity which contributes to developmental coordination disorder (DCD). The detailed information of the child's abilities and difficulties forms the basis for framing different interventions, that can help in enhancing or regulating a new skill through training. The overriding goals of the multidimensional assessment and evaluation is to record accurate data, with respect to the severity and frequency that affects the individual's behaviours and get a precise understanding of the comorbid conditions of children with ADHD. After the data collection process and gathering of all clinical and test results, the therapist interprets and analyses the data that provides relevant information and is critical for the prognosis of the children.

C. Environmental influences Treatment through environmental adaptation

Clinical evidences indicate that environments have greater influences on a child's behavioural pattern. The environment interacts with their day to day activity patterns and contributes to a greater extent for the prognosis. In therapy and interventions environmental interactions play a pivotal role, the clinical evidences recommend on a tranquil and non-stimulating environment is most suitable for children to help them on memory retention, attention control, focus and induces self-regulation. The therapist must interact and suggest to parents and teachers about activity control at various levels to help in increasing the functionality. The therapist must elaborate about the interaction of the environment with the children and emphasize on the importance of the process and the sensory input that is required to increase or disrupt regulation of, arousal level, attention control and activity level. It is important to note the predictable, consistent, and structured routines that can help children to self-regulate. The therapist introduces the systemic use of a visual schedule within the environments. Multiple environments enable the child to anticipate from a reactive mode to a purposeful play and orderly behaviour, which is a successful coping mechanism for the children.

D. Multi-dimensional therapy

1) Neurological level influences: The association between sensory modulation and dysfunction is very evident in ADHD. Sensory techniques may be effective ways in addressing behavioural and cognitive issues in children with ADHD. The goal of sensory integration is development, occupational performances and self-actualization which facilitates a child's development through sensory needs. Each individual requires a definite amount of sensory stimulation to be in an alert, skilful or adaptive state. The sensory need can be brought to practice by identifying the necessary stimulation and movements.

2) Psychological level influences: Psychological treatment is usually conducted by clinical psychologist within the multidisciplinary team. These techniques help children in specific way in attention retention and impulse controlling and specific dysfunction.

3) Behavioural level influences: Behavioural level is the most effective ways in assessment and evaluation for children. However behavioural therapy needs immediate, frequent and

purposeful consequences to achieve the desirable behaviour. These therapy integrate behavioural and sensory modulation in children which helps in interventions and prognosis in a behavioural level.

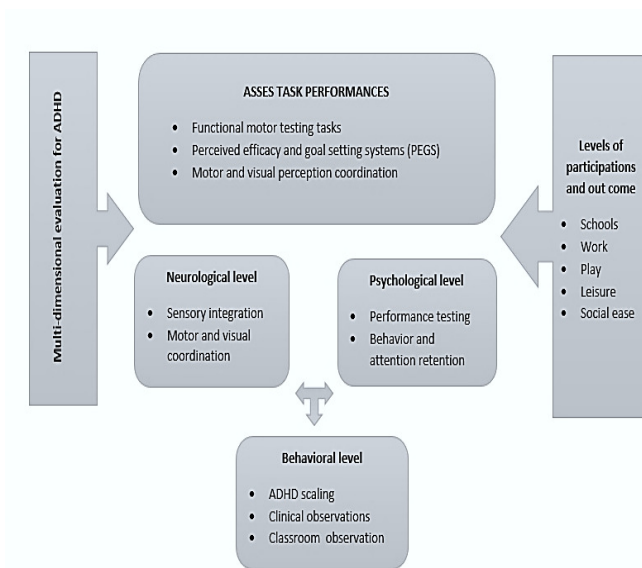


Fig. 1 Differential diagnosis using multi-dimensional evaluation for ADHD children

E. Result

The study using multi-dimensional analysis has proven effects in the study population out of which majority of the children showed prognosis with respect to the interventions and occupational therapy. In a post sessions parents and teachers of the children reported change in behavior and attention levels which was a significant improvement for school going children. While experts suggested continuing such interventional therapies can help in long term prognosis as well with a structured multi-dimensional frame work is followed and assessed at regular intervals.

IV. CONCLUSIONS

The multidimensional model insists the importance of the interaction between the child, the task and the environment. In order get the desired out comes there should be a proper integration of the parameters which include a multi faced diagnosis and evaluation at neurological, psychological and behavioral level. Given the understanding of the spectrum of other co morbid

condition it is important evaluate the conditions without exempting them from the diagnosis and also to alter the frame work in a systematic way focused on attainment of the objective of the therapy. However a multifaceted intervention and a multi-dimensional evaluation is required in order to address the other assistive conditions. However many neglect to address other condition which leads to not achieving the desired outcome. There are multiple factors that contribute to ADHD and when all factors treated or addressed can contribute to the overall development of the conditions. The Enhancement of task performance can remediate any functional and developmental difficulties, that is identified with child treatment approaches or strategies, such as handwriting skills, self-care and perceptual-motor skills.

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