

Behavioural And Academic Outcomes of Children with ADHD : A Quest for Developing An Intervention

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Abstract

Attention Deficit/Hyperactivity Disorder (ADHD) is the most common psychiatric disorder known to be associated with childhood behavioural problems, which causes many problems for about 3-7% of school-age children and shows predominantly inattentive behaviours, hyperactive and impulsive behaviour or a combination of both. These core symptoms of ADHD, namely inattention, hyperactivity, and impulsivity, which often lead to significant academic difficulties, are including thoughtless mistakes, difficulties in paying attention to class and failure of schoolwork that repeatedly cause the teacher and parent of the child to deal with these challenging behaviours of children with ADHD. This can lead children, diagnosed with ADHD, to be involved in negative relationships at home and at school. Parents and teachers may not be fully aware of the treatment options available for this psychiatric disorder. Although stimulant drugs are a form of treatment for ADHD, parents and teachers should also be aware of many effective behavioural interventions for children with ADHD. Similarly, there are currently a limited number of interventions available that help directly ADHD students who struggle academically. Therefore, it is necessary to identify both the academic and behavioural outcomes of children with ADHD and interventions to address these behavioural and educational outcomes.

Key Words Behavioural Outcomes, Academic Outcomes, ADHD, Inattention, hyperactivity

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INTRODUCTION

Attention Deficit / Hyperactivity Disorder (ADHD) is characterized by a constant pattern of behavior that includes inattention, hyperactivity/impulsivity or both (Barkley 1990, DSM-IV-TR 2000) for at least six months, the behavior being more severe than what is typical for children at the same progressive level (American Psychological Association (APA) 2013). The symptoms of ADHD need not be specifically based on oppositional defiant disorder, hostility or failure to understand instructions (DSM-IV-TR 2000 & 2013). There are currently three different types of ADHD subtypes, each containing a set of criteria that are required for diagnosis. These three subtypes are predominantly inattentive in presentation (eg difficulty of sustaining attention, easily distracted), predominantly hyperactive-impulsive presentation (such as wriggling or writhing in the seat, talks excessively), and combined presentation (eg, someone who meets criteria for the overwhelming inattentive presentation and the predominantly hyperactive-impulsive presentation) (American Psychological Association, 2013 & Barkley, RA 2000).

To be diagnosed with ADHD, a child must meet criteria from at least one of the above presentation types (DSM-5, American Psychiatric Association, 2013). In addition to the above criteria, there are other factors that must be present to be diagnosed with ADHD. Several ADHD symptoms (i.e., inattentive or hyperactive-impulsive) must be present before the age of 12 and present in at least two settings and cause significant impairment of social, educational or professional ability. Finally, the symptoms of ADHD should not be due to other disorders (American Psychiatric Association, 2013).

According to the American Psychiatric Association (2013), it is important to specify the following: (1) the nature of ADHD (combined, predominantly intentional or predominantly hyperactive-impulsive presentation); (2) if the criteria has been met for the past six months or earlier, and whether or not the symptoms continue to influence social, academic or professional functions and (3) the severity of ADHD (mild, moderate or severe) . Currently, ADHD has a prevalence rate of about 5% in children and is more common in boys than girls. The ratio of male and female being diagnosed with ADHD is approximately 2: 1 in children and 1.6: 1 in adults (American Psychiatric Association, 2013).

ASSESSMENT OF ADHD

Childhood with ADHD is most often evaluated through interviews, rating scales, and school observations and is diagnosed based on current DSM symptom criteria (Wright, K.D., Waschbusch, D.A. & Frankland, B.W., 2007). Rating scales are mostly completed by parents, teachers and sometimes children - depending on

their age and abilities. Parents, teachers, and sometimes children are also typically interviewed in order to get background information, medical and family history, behavioural problems, and other relevant information (Saxe, L. and K.J. Kautz., 2003). Observations are conducted by a professional who will observe the child in multiple settings while looking for the presence of ADHD behaviours (Barkley, R. A., 2000). While this is the typical method of childhood assessment of ADHD, it is important that a diagnosis is based on a combination of assessment tools that together lead to a diagnosis of ADHD, rather than relying on one or two methods alone.

Causes of ADHD

There are many different theories about the causes of ADHD (Axelrod, M.I., Zhe, E.J., Haugen, K.A. and Klein, J.A., 2009). The American Psychiatric Association (2013) points out that the extent of course of the disorder may depend on a variety of factors, including the child's family, school and peer relationships. That is to say, the symptoms of the disorder can vary depending on how the family, the school, and the peers deal with the child's behaviour. Fortunately, negative interactions between child's family, the school, and the peers often decline with successful treatment of the disorder. There are several other theories about the causes of ADHD, which include genetic factors, abnormal brain development, environmental factors, and brain activity (Barkley, 2000). With regard to abnormal brain development, ADHD is thought to be caused by certain neurotransmitters in the brain, as well as lowered activity in certain brain regions. Researchers have found that children diagnosed with ADHD have lower electrical activity in the frontal region of the brain than children without ADHD when they using an electroencephalograph (EEG) during mental activity. In addition, researchers have also compared blood flow in the brain between children with ADHD and children without ADHD. The results showed that children diagnosed with ADHD had lower blood flow to the frontal area of the brain, especially to the areas that deal with inhibition and sustained attention (Barkley, 2000).

According to Barkley (2000), there are two main causes of abnormal brain development namely the environment and our genes. In terms of the environment, there are many harmful substances that can cause abnormal brain development during pregnancy. The obvious harmful substances include alcohol, cigarettes and illegal drugs. Exposure to such harmful substances during pregnancy has not only resulted in abnormal brain development but also behavioural problems in children. Another possible cause of abnormal brain development and the development of ADHD is our genes. According to Barkley (2000), previous research has shown that if a person in the family has ADHD, the risk of other family members having

ADHD rises by 500%. In addition, twin studies have shown a concordance rate of 80-90% for monozygotic twins and 32% for dizygotic twins. Of course, both heredity and the environment may play a role in the development of ADHD and its many symptoms (Baker, S.K., Chard, D.J., Ketterlin-Geller, L.R., Apichatabutra, C., and Doabler, C., 2009).

BEHAVIORAL RESULTS ASSOCIATED WITH ADHD BEHAVIOR PROBLEMS

Children with ADHD often show a variety of behavioural problems. The American Psychiatric Association (2013) notes that children diagnosed with ADHD often struggle with chores and other activities. They also tend to be slightly distracted and forgetful. Children diagnosed with ADHD often interrupt others and have the problem of focusing and ignoring other sounds, while other children have no problem with regards to ignoring sounds. Some children with ADHD exhibit many hyperactive behaviours such as wriggling, squirming, getting in and out of their seat, over-talking, blurting, playing with objects, and other disturbing behaviours (Johnson, Samantha, and Wolke, Dieter., 2013).

Children diagnosed with ADHD may be forgetful about everyday activities such as bringing their required materials to the class. In terms of social situations, children with attention problems may have difficulty listening to others, following details and staying focused on the topic. Because of the many behavioural problems, children with ADHD, exhibit a diagnosis of ADHD and tend to be associated with lower academic achievement, social rejection, and poorer occupational functioning in adults (American Psychiatric Association, 2013). Although these behaviours are common, it is important to note that these behaviours are tendencies that are not definitive behaviours displayed by each child diagnosed with ADHD. Children diagnosed with ADHD are often diagnosed with another comorbid disorder.

According to Barkley (2000), a diagnosis of ADHD is often associated with both behavioural and emotional disorders. In fact, 45% of children diagnosed with ADHD are identified with at least one other psychiatric disorder. It is also not uncommon for these children to have two or more disorders besides ADHD. Many children with ADHD may also be diagnosed with depression and anxiety. As mentioned above, it is very common for these children to show more oppositional defiant behaviour than their peers. Sometimes this oppositional defiant behaviour evolves into antisocial behaviours such as lying, stealing, running away, and may even develop into criminal activity.

According to the American Psychiatric Association (2013), the Oppositional Defiant Disorder has a comorbidity rate of about 50% in children with the combined

presentation, and a quarter of them are diagnosed with the inattentive presentation. In addition, no less than a quarter of students diagnosed with the combined presentation receive the diagnosis of “behavioural disorder.” Other common disorders that may be associated with ADHD include disorders of mental derangement, specific learning disorders, anxiety disorders, major depressive disorders, intermittent explosive disorders, substance abuse disorders, antisocial or personality disorders, obsessive-compulsive disorder, tic disorders, and autism spectrum disorders (American Psychiatric Association, 2013). Comorbidity can occur in children diagnosed with ADHD for three reasons: The disorders have the same aetiology, one disorder can cause the other, or they are not related at all and simply coexist (Barnard-Brak, Sulak & Fearon, 2011).

BEHAVIORAL INTERVENTIONS

Although ADHD is commonly treated with stimulant medication such as Ritalin and Adderall, behavioural interventions are also other forms of treatment which can be used in addition to or instead of taking drugs. According to Barkley (2000), research shows that the results are better when children with ADHD receive a combination of medical and behavioural treatments. Because of the many side effects of stimulants (such as poor appetite, headaches and tics), some may feel uncomfortable while treating a child with medication. Fortunately, successful interventions beyond medication have been developed and implemented. Some general behavioral interventions that have been used include reinforcement (Kennedy & Jolivet, 2008, Harding, Wacker & Berg, 2002), reaction costs (Proctor & Morgan, 1991, Reynolds & Kelley, 1997), self-monitoring (Axelrod, Zhe, Haugen & Klein, 2009; Ganz, 2008), and Auszeit (Vegas, Jenson & Kircher, 2007, Fabiano et al., 2004).

American Psychiatric Association (2013) offers suggestions for targeting academic and behavioural problems related to ADHD, stating that it can help to minimize the symptoms of ADHD when frequent rewards are used when a child demonstrates the appropriate behaviour. Other suggested suggestions include: closely supervising children, keeping the child busy, and also keeping the child interested in the activities (Bennett D.E., Zentall, S.S., French B.F., & Giorgetti-Borucki, K., 2006). ADHD children can be helped by providing consistent external stimulation such as using electronics and other devices. In addition, in certain situations, some children can be helped to stay focused and task-oriented (DuPaul, G., 1991).

ACADEMIC RESULTS ASSOCIATED WITH ADHD

ACADEMIC PROBLEMS

In addition to behavioural problems, a student with ADHD displays a number

of academic problems. According to the American Psychiatric Association (2013), children diagnosed with ADHD may make mistakes in their school work and have difficulties in paying attention to details. These students also seem to be struggling to pay attention during play activities and other tasks inside and outside the school. A diagnosis of ADHD is often associated with low frustration tolerance, irritability and delays in linguistic, motor or social development. In addition, children diagnosed with ADHD often receive less learning and score several points less on IQ tests than other children of the same age. However, there is a great variability of IQ scores in children diagnosed with ADHD. In addition, it has been found that academic delays, peer rejections, and other school problems are most commonly associated with increased levels of inattention in children with ADHD. Other academic problems often involve a shift in activities and even the failure of schoolwork altogether.

According to Barkley (2000), almost all children diagnosed with ADHD are far behind at school. This is usually due to the fact that the child does not do as much homework as other children or because the child is below the performance level of other students. Children diagnosed with ADHD may be more likely to be held back than their peers due to their academic difficulties. In addition, it is not uncommon for children with ADHD to be diagnosed with learning disability. In fact, up to 40% or more of the children diagnosed with ADHD can be placed in special education programs for learning disability or behaviour disorder. Barkley (2000) noted that 20-30% of children diagnosed with ADHD have at least one type of learning disability in reading or mathematics or writing. According to Bennett et al. (2006), in mathematics, students diagnosed with ADHD tend to handle fewer problems, make more mistakes, work more slowly, and show greater variability in their work than other students in the class.

Taft and Mason (2011) also noted that students with ADHD who show behavioural problems in class often stand behind other students when it comes to the understanding the reading and writing process. These types of students often spend less time in planning what they need to read and write, have difficulty developing ideas about what they should read and write about, and read and write less than the typically developing students while making more mechanical mistakes in their work. These kinds of problems obviously show that academic achievement is an area where many ADHD children struggle with.

ACADEMIC INTERVENTIONS

There are a limited number of interventions available to meet the academic needs of students diagnosed with ADHD (DuPaul, Weyandt and Janusis, 2011). One academic intervention that has been effective for students with ADHD is direct

instruction from teachers. For example, some students may need additional instructions on how to take notes or organize tasks in their files, and they may show improved skills following a teacher-taught lesson.

Another strategy could be to provide academic instruction through computer technology. It has been found that the use of computer technology increases the task performance and academic performance for many students, including those with ADHD (Bennett, D.E., Zentall, S.S., French, B.F., and Giorgetti-Borucki, K., 2006). Barkley (2000) also notes that computers can be a very useful teaching approach for children with ADHD, as computers often provide immediate feedback while learning important academic skills. Barkley (2000) offers some examples of computer games, such as Reader Rabbit and Math Blaster, which are known to enhance reading and the willingness to do the mathematics.

Children diagnosed with ADHD often tend to be better in a one-to-one situation compared to group learning (Green, K.B., Mays, N.M., & Jolivet, K., 2011). Sometimes changes in the classroom environment can also improve a child's academic knowledge. This may include providing the child with some accommodations in the classroom if necessary, more reinforcement or smaller class sizes (Jody Sherman, Carmen Rasmussen & Lola Baydala., 2008). DuPaul, Weyandt, and Janusis (2011) find that peer tutoring has also proven to be effective in increasing task engagement and test performance. In addition, Barkley (2000) states that for some children with attention problems, it may be helpful to make the child repeat the instructions aloud. Overall, it is important for interventions to choose an intervention that very often gives immediate feedback.

According to Fuchs, Powell, Seethaler, Cirino, Fletcher, Fuchs and Hamlett (2009), some research-based mathematics interventions include strategic counting instructions, flashcards and exercises with or without tutoring. Strategic counting instruction involves teaching students how to count using certain strategies, e.g., counting from the largest number above when adding more numbers (eg $8 + 4 + 3$). Fuchs et al. (2009) mention that in order to succeed in mathematics, students must be able to read fluently and understand what they have read.

According to Dowhower (1987), repeated reading is an effective reading fluency intervention that allows a child to practice reading passages while receiving help with any error that is made. It is always a good exercise to give time for reading so that they can practice and become more familiar with words. Parents and teachers can help students to remember and pay attention to the events in the story and by way of asking the students to summarize what happened in the story or predict what might happen next (Reutzel & Hollingsworth, 1993).

CONCLUSION

Despite decades of research on diagnosis, prevalence, behavioural and educational interventions, this review analysis remains poorly informed on how to improve the educational outcomes of children with ADHD (Jody Sherman, Carmen Rasmussen & Lola Baydala, 2008). This could lead researchers to research on this important topic. It may be impossible for a teacher or educational researcher to conduct long-term randomized controlled trials of medications used as treatment modalities for practical and ethical reasons. However, large-scale studies that use modern statistical methods, such as hierarchical linear modelling, can be used positively by educational researchers or teachers to develop a pedagogical intervention that meets the needs of the teachers as well as parents. Therefore, this review study recommends large-scale prospective studies on the development and design of educational measures to improve the educational and academic outcomes of children with ADHD. They must include several outcomes, focusing on academic skills, behavioural skills and successful completion of primary education. In addition, a coalition of parents, educators, and health care providers must work together to promote ambitious pedagogical intervention to improve the behavioural and academic outcomes of the children with ADHD...

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