

Learning Disorder in Attention Deficit Hyperactivity Disorder (ADHD) Children: A Literature Review

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ABSTRACT

Introduction: Attention Deficit Hyperactivity Disorder (ADHD) can cause many problems in children. The main symptoms of ADHD such as inattention, impulsivity, and hyperactivity can cause social, family, and academic problems. Learning disorders are one of the problems that might affect children with ADHD. **Objective:** This literature review paper aims to describe learning disorders in ADHD children. **Methods:** The journals were collected through Google Scholar and PubMed using the keyword (ADHD) AND (learning disorder OR learning disabilities) with a journal publication filter in 2012-2022. **Results:** The presence of inattention and hyperactivity/impulsivity in children with ADHD might lead to various issues, which in a long term may affect growth and academic performance. Children with ADHD usually fail to concentrate during class and have problems with academic achievement. Working memory disorder and mathematical learning disorder were also found in children with ADHD. However, continuous assistance from the teacher can lower the problem of learning disorders in children with ADHD. **Conclusion:** ADHD children tend to have various learning disorders which might affect academic performance.

Keywords: attention deficit hyperactivity disorder (ADHD); learning disorder, academic performance

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized bv inattention/focus, hyperactivity, and impulsivity. Children in elementary school are frequently affected by these disorders, which can impact social interaction, family contact, and academic performance [1]. The Diagnostic and Statistical Manual, Fifth Edition (DSM-5) states that the disease must have started before the age of 12 years old, last at least six months, and occur in at least two separate settings, such as home and school. Over 3-7% of children in elementary school are ADHD-positive. As many as 82 million children in Indonesia had mental health issues in 2007, according to the National Statistics Center, with 16 million of them having ADHD [2]. Based on research done in Jakarta in 2011, there were 26.2% of children in Jakarta had ADHD [3]. In a ratio of around four to one, boys are more likely to experience ADHD issues than girls [4]. In her book, Yunias Setiawati also mentions that according to Kessler et al. (2008) and Rydell (2010), 6 to 66% of those who had ADHD in childhood would typically continue to have it through adulthood.

If ADHD develops throughout adulthood, it may result in more severe issues including depression, drug addiction, abuse, and failure [5].

Symptoms in children with ADHD begin to appear in childhood when they start to engage in academic activities [6]. Children with ADHD disorders are more likely to experience academic failure, family conflicts, oppositional behavior, difficulty adapting to their surroundings, disobedience, forgetfulness, acting impulsively, and poor learning achievements [7]. The outcome that demonstrates how well students have learned to achieve learning objectives is called learning achievement. The cognitive (knowledge), emotional (behavior), and psychomotor (activity) aspects of these achievements are all necessary [8]. Additionally, learning difficulties in children might be brought on by ADHD conditions. Up to 15–30% of kids with indications of ADHD struggle in mathematics, reading, and spelling [9].

A learning disorder occurs when a person has impairments in development and is unable to understand what they see and hear [10]. Learning disorders can be brought on by internal or external factors. These internal causes of neurological system or function issues and also a lack of motivation for itself. While external causes may appear in the form of inappropriate environmental factors, such as unsupportive friends, parents, relatives, teachers, and other support systems [11]. Due to the presence of some learning disorders, children might experience a decrease in achievement and be unable to achieve learning goals.

Children with ADHD are reported to have quite a lot of learning disorders. Many cases have been reported by teachers that children with ADHD have learning disorders, such as disrupting other children and not being able to complete their assignments completely [6]. The existence of inattention or trouble concentrating in children with ADHD is one of the factors of it. Difficulty staying focused is one of the kinds and characteristics of learning disorders. Up to 40% of the 4 million children

who suffer from learning disorders often have trouble focusing [10]. Due to difficulties involving concentration, emotional reaction, social skills, and academic abilities, children with ADHD frequently do not achieve their skills and capabilities in school [12]. Compared to their classmates, the majority of them struggle to complete their tasks, get suspended from school and need more assistance through adolescence [13].

Additionally, ADHD kids often struggle to respond throughout the teaching and learning process, which has a negative impact on their academic performance [14].

REVIEW

Learning Concentration Disorder

ADHD is characterized by three symptoms: inattention, impulsivity, and hyperactivity. Inattention is a symptom of diminished attention to anything that is defined by a child's inability to focus for an extended period of time when studying or playing [28]. Low concentration in children with ADHD symptoms can cause health issues, behavioral issues, cognitive dysfunction, social

relationship issues, and learning disorders. If these issues persist for the long term, they may affect growth and academic performance and also annoy neighbors as well as other individuals in the neighborhood [15]. Some ADHD students had trouble focusing on their studies. Due to their incapacity to carry out activities correctly throughout the education and learning process, ADHD children at the school find it difficult to develop their academic achievements. Inattention and hyperactivity lead to disruptions in learning concentration. Some of the behaviors associated with learning disorders that were observed in the study include the inability to sit still for long periods of time, the ability to stand up from their chairs five times in a minute on a median, the tendency to hit the table, to laugh out of the blue, the inability to understand questions from the teacher, the inability to follow instructions in an ordered manner, and the need for explicit teacher guidance. Students usually become easily distracted when writing, and after writing one word, they stop writing immediately and begin to doodle or draw in their books.

Children with ADHD and learning concentration disorders also frequently run and walk in class. They usually fail to pay attention when the teacher is lecturing in class and instead focus more on their friends. Moreover, they frequently annoy their friends during educational and learning activities. Furthermore, it was found that the ADHD children also had a habit of biting their pencils, banging on the chalkboard, raising their feet off the table, acting uncontrollably, and rushing outside the classroom [16].

However, these issues can be fixed if a shadow teacher is present in the class (assistant teacher). Even if they need to be guided and reminded to return their concentration repeatedly, students may finish their assignments effectively when a second teacher is present. The teacher can encourage the students to work on or read questions in front of the class if they are starting to lose concentration. If students are able to answer correctly, the teacher will offer them rewards or smileys. Game therapy also can help the teacher to control emotions, social skills, and cognitive development in

children with ADHD, such as building blocks and threading beads [16]. There is a need for early ADHD detection training for parents and teachers in order to assist parents and teachers in recognizing the child's behavior and overcoming the child's problems in order to achieve positive outcomes, improve family awareness, and create a conducive learning environment for children [29].

Impaired Academic Achievement

Children with ADHD also reported having trouble with learning achievement. Learning achievement is defined as the result that shows the success of student learning toward learning objectives. ADHD issues are commonly found in children at the age of 6 years old. This is because the disorder's early-stage symptoms are more obvious at a younger age. The severity of the symptoms decreases as they grow [12]. Some ADHD students reported having intermediate learning achievement and others had limited learning achievement. Learning disorders such as dyslexia (a reading disability), dyscalculia (a numeracy disorder), dysorthography (a spelling disorder), dyspraxia (a motor disorder), and dysphasia (speech and language disorder) affect 20-30% of ADHD children. Sensorimotor function limitations and learning disorders caused poor or moderate learning achievement problems [17]. Without effective treatment, ADHD can have severe repercussions, including academic failure, social disturbance, unintended accidents, strained family connections, and iob disorganization. Furthermore, ADHD is an illness that impacts many facets of life, including economic, emotional, and cultural factors [30].

Working Memory Disorder

Working memory is an important component of the executive function, which has the role to memorize information for a certain period of time [18]. Working memory has a more accurate predictive value when compared to the intelligence quotient (IQ) value. Working memory disorder can disrupt an ADHD child's ability to understand and follow instructions, have difficulty understanding lessons at school, have difficulty doing schoolwork, maintain concentration, and be easily distracted, and these problems can cause the children to drop out of school [19,20,21]. Working memory disorders are related to the incidence of learning difficulties in children [22]. In previous studies, Kasper and Rapport reported that 81-98% of children with ADHD have memory disorders.

Mathematical Learning Disorder

ADHD is often comorbid with learning deficits, especially in mathematics skill deficits. Around 10- 30% of ADHD students are comorbid with mathematical learning deficits [23]. Symptoms of inattention showed stronger associations with mathematics skills than hyperactivity [24]. Skill, memory, visuospatial skill, and executive skill [25].

Mathematic skill is included in executive skills, and executive functions are an aggregate of cognitive and metacognitive processes. So, it makes it difficult in perceiving mathematical concepts and turning written questions into mathematical notations, identifying and understanding symbols, and sorting numeral series [23]. Based on the previous paragraph,

developing basic mathematics skills for children, especially children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) is given a challenge to the instructor or teachers [26]. Teachers or instructors should have strategies to teach mathematics to ADHD students [27]. ADHD students take a long time to concentrate and understand the lesson, and it makes teachers and instructors give more time to teach them than healthy students [26]. So, teachers or instructors need the help of parents to develop mathematics skills. Both of them should coordinate and communicate about the development of the ADHD student.

SUMMARY

Learning disorders are one of the issues that may be caused by ADHD in children. Children with ADHD were found to experience learning disorders such as learning concentration disorder, impaired learning achievement, working memory disorder, and mathematical learning disorder.

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CONFLICT OF INTEREST

There is no conflict of interest to declare.

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