



Depression Associated Cognitive Impairment in School Going Children

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ABSTRACT

In the recent years depression associated with cognitive impairment has been widely reported. Cognitive symptoms occur after emergence of psychopathological symptoms but little is known about the pathophysiological events linking depression and cognitive impairment. Newer biological, structural and functional neuroimaging techniques have resulted in a better definition of this relation. Depression and cognitive dysfunction share a common pathophysiology in brain areas implicated in emotional and cognitive processing which may be under the control of genetic and environmental factors. The school years are very important years, when the brain develops and knowledge base and critical thinking skills broadens. Depression and other mental illness often start before people have finished their educational process. The problems with attention, concentration and thinking can make it very difficult to keep up with school work, and even students who used to be excellent in various fields may become discouraged by the lost time, or their declining grades. When students fall behind in their academics, they may start to view themselves negatively, and prefer to quit rather than keep exposing themselves to more academic failure. They also lose the opportunity to consolidate good study and learning habits, or worse, a poor learning style may develop.

Keywords: cognitive impairment, schizophrenia, neuroimaging, adolescence.

INTRODUCTION

Depression is the most common psychiatric disorder in the world. Lifetime prevalence of depression ranges from 5% to 25%.¹ It is estimated by the World Health Organization (WHO) that unipolar depression will be one of the leading cause of suffering in the year 2020.² In the recent years, there has been a renewal of interest in testing patients with depression on a broad range of neuropsychological tasks. It has promoted a growing awareness that, like schizophrenia and neurological disorders, mood disorders may be associated with a distinct pattern of cognitive impairment. Such impairments of cognitive function are seldom measured. This is surprising because it is easier objectively to measure memory impairment, for example, than it is to characterize other core features of depression such as the severity of depressed mood or sleep disturbance. Cognitive impairment effects the person's ability to function occupationally and, hence, the timing of their return to work but in case of children it severely hamper their schooling which reflect in term of growing dropouts. However, also central to current interest is the effort to link theories of cognitive neuropsychology to the anatomy and physiology of brain function. In this article we aim to review the cognitive deficits reported in depression and how these deficits may reflect disruption in the anatomy and function of the brain of children.

Cognitive function

Cognition means information processing. It denotes a relatively high level of processing of specific information including thinking, memory, perception, motivation, skilled movements and language. The hippocampus

contains the neural circuitry crucial for cognitive functions such as learning and memory. It refers to the perceptual and intellectual aspects of mental functioning. Among the specific functions that may be assessed in determining the intactness or adequacy of cognition are orientation, the ability to learn necessary skills, solve problems, think abstractly, reason and make judgments', the ability to retain and recall events, mathematical ability and other forms of symbol manipulation, control over primitive reactions and behaviour, language use and comprehension, attention, perception and praxis.³ Cognitive deficits include inability in:

1. paying attention
2. processing information quickly
3. remembering and recalling information
4. responding to information quickly
5. thinking critically, planning, organizing and solving problems
6. initiating speech

Cognitive impairment in depression

Depression is associated with a number of deficits problems in memory and learning. Several evidences have suggested that depression increases the risk of cognitive impairment and functional disability.⁴⁻⁵ On the other hand, cognitive dysfunction during remission may also play a critical role in increasing the individual's vulnerability for the first onset, maintenance and future recurrence of depressive episodes.⁶⁻⁷ Cognitive symptoms, such as difficulty making decisions and poor concentration, are included in the DSM-IV-TR diagnostic



criteria for major depression. Initially, cognitive impairment has been attributed to depressive symptoms and studies have involved patients during the acute phase of depression. However, in the last decade it has been widely reported that cognitive dysfunction remains unresolved even after remission of depressive symptoms.⁸⁻¹² Moreover, some authors have suggested that impairment of cognitive measures is not correlated to depression severity and psychiatric comorbidity.¹³⁻¹⁶ In addition, cognitive deficits have been reported in healthy first degree relatives of patients with unipolar depression.¹⁷ Taken together these data provide evidences for a dissociation between cognitive function and psychopathological symptoms in depression. Although it is clear that the presence of cognitive deficits in depression is independent of the clinical remission of psychopathological symptoms the reasons for poor cognitive performance in depression remains unclear and little is known about the pathophysiological events linking cognitive impairment and depression.

Cognitive impairment in children undergoing depression

It is not uncommon for children to be diagnosed with depression and other related disorder. Childhood depression is different from the normal "blues" and everyday emotions that occur as a child develops. Just because a child seems sad, doesn't necessarily mean he or she has significant depression. If the sadness becomes persistent, or if disruptive behavior that interferes with normal social activities, interests, schoolwork, or family life develops, it may indicate that he or she has a depressive illness. Keep in mind that while depression is a serious illness, it is also a treatable one. About 2.5% of children in the U.S. suffer from depression. Depression is significantly more common in boys under the age of 10. But by age 16, girls have a greater incidence of depression.¹⁸

Cognitive impairment, also referred to as intellectual disability, describes the condition of a child whose intellectual functioning level and adaptive skills are significantly below the average for a child of his chronological age. It is the most common developmental disorder, occurring in approximately 12 of every 1000 children.¹⁹ Varying levels of developmental delays may be identified in a child's social skills, emotional development, communication capabilities, physical function, and academic skill sets.²⁰

The Center for Disease Control and Prevention (National Public Health Institute, the United States) defines cognitive impairment among 8-year-old children by a score of 70 or below on a test of intellectual capability, more commonly known as an IQ test.¹⁹ Levels of cognitive impairment severity are defined by specific IQ ranges.²⁰

- Mild Cognitive Impairment – IQ of 50 to 70
- Moderate Cognitive Impairment – IQ of 35 to 55
- Severe Cognitive Impairment – IQ 20 to 40

• Profound Cognitive Impairment – Below 20

Cognitive impairment can be caused by a number of factors. Many instances of cognitive impairment are the result of genetic or chromosomal disorders. Cognitive impairment can also be attributed to injuries or illnesses that occur during pregnancy or early infancy. Extreme malnutrition, inadequate medical care, and exposure to environmental toxins can lead to cognitive impairments as well.²⁰ With many possible causes, it is often difficult to cite a specific single cause of a cognitive impairment in a child.

Symptoms of depression in children

The symptoms of depression in children vary. It is often undiagnosed and untreated because they are passed off as normal emotional and psychological changes that occur during growth. Early medical studies focused on "masked" depression, where a child's depressed mood was evidenced by acting out or angry behavior. While this does occur, particularly in younger children, many children display sadness or low mood similar to adults who are depressed. The primary symptoms of depression revolve around sadness, a feeling of hopelessness, and mood changes. It includes:

1. Irritability or anger
2. Continuous feelings of sadness and hopelessness
3. Social withdrawal
4. Increased sensitivity to rejection
5. Changes in appetite -- either increased or decreased
6. Changes in sleep -- sleeplessness or excessive sleep
7. Vocal outbursts or crying
8. Difficulty concentrating
9. Fatigue and low energy
10. Physical complaints (such as stomachaches, headaches) that don't respond to treatment
11. Reduced ability to function during events and activities at home or with friends, in school, extracurricular activities, and in other hobbies or interests
12. Feelings of worthlessness or guilt
13. Impaired thinking or concentration
14. Thoughts of death or suicide

Not all children have all of these symptoms. In fact, most will display different symptoms at different times and in different settings. Although some children may continue to function reasonably well in structured environments, most kids with significant depression will suffer a noticeable change in social activities, loss of interest in school and poor academic performance, or a change in



appearance. Children may also begin using drugs or alcohol, especially if they are over the age of 12.

Although relatively rare in youths under 12, young children do attempt suicide -- and may do so impulsively when they are upset or angry. Girls are more likely to attempt suicide, but boys are more likely to actually kill themselves when they make an attempt. Children with a family history of violence, alcohol abuse, or physical or sexual abuse are at greater risk for suicide, as are those with depressive symptoms.

Cause of depression in children

As in adults, depression in children can be caused by any combination of factors that relate to physical health, life events, family history, environment, genetic vulnerability and biochemical disturbance. Depression is not a passing mood, nor is it a condition that will go away without proper treatment. Bullying is a common cause of depression. Sometimes it can be difficult for parents to understand how upsetting bullying is when it is 'only' teasing or name calling. But it is very distressing for children and can lead to later problems in life. Many adults who were bullied as children can develop depression, lack of self-confidence and feel anger towards the bullies and the adults who did not help them.

Diagnosis of depression in children

If a child have symptoms of depression lasted for at least two weeks, a consultation with a mental health care professional who specializes in children is also recommended.

A mental health evaluation should include interviews with the parent or primary caregiver and the child, and any additional psychological testing that is necessary. Information from teachers, friends and classmates can be useful for showing that these symptoms are consistent during child's various activities and are a marked change from previous behavior.

There are no specific tests that can clearly show depression, but tools such as questionnaires (for both the child and parents) combined with personal information can be very useful in helping diagnose depression in children.

Treatment

Treatment options for children with depression are similar to those for adults, including psychotherapy (counseling) and medicine. Psychotherapy is recommended first and then antidepressant medicine as an additional option if there is no significant improvement. The category of drugs includes selective serotonin reuptake inhibitors (SSRIs) such as fluoxetine, citalopram, paroxetine etc available in the dosage form of tablets and injections.

CONCLUSION

Newer findings suggest that first-time depression in children is occurred at younger ages than previously reported. As in adults, depression may occur again later in life. Depression often occurs at the same time as other physical illnesses. And because studies have shown that depression may precede more serious mental illness later in life, diagnosis, early treatment and close monitoring are crucial.

Parent most of the time feel reluctant to consider their children affected with depression mainly because of social stigmas associated with mental disorders. It is very important to understand depression and realize the importance of treatment so that child may continue to grow physically and emotionally in a healthy way. It is also important to seek education about the future effects of depression may have on the child throughout adolescence and adulthood.

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