



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health

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Attention Deficit Hyperactivity Disorder (ADHD)-(Part I)

This is the first in a series of two articles on Attention Deficit Hyperactivity Disorder (ADHD) . This article describes the causes and symptoms of ADHD and second article will describe the diagnosis and treatment of ADHD.

ADHD has been a known entity for a long time. In fact, a condition that appears to be similar to ADHD was described by Hippocrates, who lived from 460 to 370 BC. ADHD usually appears in childhood but can be diagnosed in adults too. Some experts have linked ADHD with an increased risk of accidents, drug abuse, failure in school, antisocial behavior and criminal activity. But others view ADHD in a positive light, arguing that it is simply a different method of learning involving greater risk-taking and creativity.

An estimated 3 to 5 per cent of children are affected with ADHD and about three times more common among boys than girls. Up to 60 per cent of child patients retain their symptoms into adulthood.

Causes

The exact cause of ADHD is unknown. It is likely that many factors play a role in each case of ADHD. Possible causes of ADHD include:

Genes

ADHD has a strong genetic basis in the majority of cases, as a child with ADHD is four times as likely to have had a relative who was also diagnosed with the same disorder. At the moment, researchers are investigating many different genes, particularly ones involved with the brain chemical dopamine production. People with ADHD seem to have lower levels of dopamine in the brain.

Children with ADHD who carry a particular version of a certain gene have thinner brain tissue in the areas of the brain associated with attention. Research into this gene has showed that the differences are not permanent, however. As children with this gene grow up, their brains develop to a normal level of thickness and most ADHD symptoms subside.

Nutrition and Food

Certain components of the diet, including food additives and sugar, can have clear effects on behavior. Some experts believe that food additives may exacerbate ADHD. And a popular belief is that refined sugar may be to blame for a range of abnormal behaviors. But, simply removing sugar from a child's diet is unlikely to impact their ADHD behavior significantly.

Some studies also suggest that a lack of omega-3 fatty acids is linked to ADHD symptoms. Fish oil supplements appear to alleviate ADHD symptoms (at least in some children) and may even boost their performance at school.

Maternal smoking

There may be a link between ADHD and maternal smoking. However, women who suffer from ADHD themselves are more likely to smoke, so a genetic explanation cannot be ruled out. Nevertheless, nicotine can cause hypoxia in utero.

The Environment

Lead exposure has also been suggested as a contributor to ADHD. Although paint no longer contains lead, it is possible that preschool children who live in older buildings may be exposed to toxic levels of lead from old paint or plumbing that has not been replaced.

Brain Injury

Brain injury may also cause ADHD in some very small minority of children. This can come about following exposure to toxins or physical injury, either before or after birth. Experts say that head injuries can cause ADHD like symptoms in previously unaffected people, perhaps due to frontal lobe damage.

Other Possible Causes

ADHD researchers are currently investigating the frontal lobe of the brain, the area controlling problem solving, planning, understanding other people's behavior and restraining our impulses. A study has found that children with ADHD have smaller brain volumes (by 3-4 percent) in all the brain regions measured. But children on ADHD medication had similar brain volumes to unaffected children, in some of the areas measured.

One big difference was the amount of white matter found in the brain. Children with ADHD who had never taken medication had an abnormally small volume of white matter.

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Symptoms

Symptoms usually develop over several months. In general, impulsiveness and hyperactivity are observed before lack of attention is noticed, which often appears later. It also may go unnoticed because the “inattentive daydreamer” may be overlooked when the child who “cannot sit still” at school or is otherwise disruptive will be noticed. The observable symptoms of ADHD will therefore vary a great deal depending on the situation and the specific demands it makes on the child’s self-control.

Different forms of ADHD may result in the child being labelled differently. For example, an impulsive child may be labelled a “discipline problem.” A passive child may be described as “unmotivated.” But ADHD could be the cause of both behaviour patterns. It may only be suspected once the child’s hyperactivity, distractibility, lack of concentration or impulsiveness start affecting school performance, friendships or behavior at home.

The official diagnosis of ADHD includes the three major symptoms (inattentiveness, hyperactivity and impulsiveness). People with ADHD may have any one or all of the major symptoms.

Three subtypes of ADHD

Predominantly Hyperactive-Impulsive Type

If symptoms of hyperactivity-impulsiveness but not symptoms of inattention have been shown for at least six months to an extent that is disruptive and inappropriate for the individual’s developmental level.

Predominantly Inattentive Type

If symptoms of inattention but not symptoms of hyperactivity-impulsiveness have been shown for at least six months to an extent that is disruptive and inappropriate for the individual’s developmental level.

Combined Type

If symptoms of both inattention and hyperactivity-impulsiveness have been shown for at least six months to an extent that is disruptive and inappropriate for the individual’s developmental level.

Hyperactive/Impulsive Type of ADHD

Hyperactive children always seem to be “on the go” or constantly in motion. They dash around touching or playing with whatever is in sight, or talk incessantly. Sitting still at dinner or during a school lesson or story can be difficult. They squirm and fidget in their seats or roam around the room. Or they may wiggle their feet, touch everything or noisily tap their pencil. Hyperactive teenagers or adults may feel internally restless. They often feel the need to stay busy and may try to do several things at once.

Impulsive children seem unable to control their immediate reactions or think before they act. They will often blurt out inappropriate comments, show their emotions without restraint and act without considering the consequences. They may find it hard to wait for things they want or to take their turn in games. They may grab a toy from another child or hit out when upset. As teenagers or adults, impulsive people may choose to do things that have an instant reward instead of seeing through activities which take more effort but would lead to greater but delayed rewards.

Indicators of hyperactivity-impulsiveness

- Feeling restless, fidgeting with hands or feet and squirming while seated
- Running, climbing or leaving a seat in situations where sitting or quiet behavior is expected
- Blurring out answers before hearing the whole question

- Interrupting or intruding on others
- Having difficulty with waiting in line or taking turns or enjoying leisure activities quietly

Adolescents or adults may feel very restless, as if “driven by a motor” and talk excessively.

Inattentive Type of ADHD

Children diagnosed with the Predominantly Inattentive type of ADHD have trouble focusing on any one thing and may get bored with a task after only a few minutes. However, if they are doing something they really enjoy, they usually have no trouble paying attention. But focusing deliberate, conscious attention to organizing and completing a task or learning something new is difficult.

Homework is particularly hard for these children. They will forget to write down an assignment, or leave it at school. They will forget to bring a book home, or bring the wrong one. The homework, if finally finished, will be full of mistakes. It is often accompanied by frustration for the child and their parents.

Inattentive children are rarely impulsive or hyperactive, but have a significant problem paying attention. They often appear to be daydreaming, “spacey,” easily confused, slow moving, and lethargic. They may process information more slowly and less accurately than other children. This child has a hard time understanding what he or she is supposed to do when a teacher gives oral or even written instructions. Mistakes are frequent. The child may sit quietly and appear to be working, but in reality he or she is not fully attending to or understanding the task and the instructions.

Children with this form of ADHD often get along better with other children than the more impulsive and hyperactive forms, as they may not have the same sorts of social problems common with the other forms of ADHD. Because of this, their problems with inattention are often overlooked.

Indicators of inattention

- Not giving close attention to details or making careless mistakes in schoolwork, work or other play activities.
- Becoming easily distracted by irrelevant sights and sounds
- Failing to pay attention to instructions and making careless mistakes, not finishing work, chores or duties
- Losing or forgetting things like toys, pencils, books, assignments and tools needed for a task
- Having trouble organizing activities, often skipping from one uncompleted activity to another
- Not appearing to listen when spoken to directly
- Avoiding or disliking things that take a lot of mental effort for a long period of time

Combined Type of ADHD

Children exhibiting hyperactivity, impulsiveness and inattention are considered to have the **combined type** of ADHD, which combines all of the above symptoms.

Source

An Introduction to ADD/ADHD, available from <http://psychcentral.com/disorders/adhd>

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

Table 1: Vaccine-preventable Diseases & AFP

25th February - 02nd March 2012 (09th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01	00	00	00	00	00	00	00	00	01	02	13	19	- 31.57 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	01	00	00	00	00	01	00	00	00	02	02	10	15	- 33.3 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	02	04	- 50.0 %
Whooping Cough	01	00	00	00	00	01	00	00	00	02	00	17	06	+ 183.3 %
Tuberculosis	05	34	03	08	08	35	01	16	10	120	209	1511	1766	- 14.4 %

Table 2: Newly Introduced Notifiable Disease

25th February - 02nd March 2012 (09th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	40	05	24	03	21	15	10	03	17	138	130	922	917	+ 0.54 %
Meningitis	03 CB=1 GM=1 KL=1	00	00	01 MN=1	01 KM=1	01 KN=1	01 PL=1	01 BD=1	00	08	19	131	190	+ 31.0 %
Mumps	14	07	03	20	22	10	13	02	07	98	27	742	357	+ 107.8 %
Leishmaniasis	00	03 ML=3	02 MT=1 HB=1	00	00	01 KN=1	00	00	00	06	02	157	101	+ 55.44 %

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
DPDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008. .

Dengue Prevention and Control Health Messages

Thoroughly clean the water collecting tanks bird baths, vases and other utensils once a week to prevent dengue mosquito breeding.

Table 4: Selected notifiable diseases reported by Medical Officers of Health
25th February - 02nd March 2012 (09th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	156	1897	5	27	0	4	4	50	8	12	9	23	1	1	1	15	0	1	92
Gampaha	73	1465	3	22	1	1	0	15	0	0	4	32	0	4	2	53	0	1	67
Kalutara	29	467	5	25	0	2	1	12	0	3	5	38	0	1	0	6	0	0	62
Kandy	22	477	2	16	0	0	1	7	0	4	2	20	4	40	1	3	0	0	96
Matale	9	98	1	23	0	2	0	6	0	3	0	9	0	2	0	5	0	0	83
Nuwara	6	63	4	22	0	1	1	7	0	0	1	5	2	16	0	6	0	0	85
Galle	39	244	4	25	0	1	1	6	0	4	4	21	1	9	0	1	0	0	95
Hambantota	16	131	0	9	0	0	1	2	1	5	0	15	0	17	0	3	0	0	83
Matara	41	374	1	14	0	3	2	9	3	10	1	23	3	24	4	44	0	0	100
Jaffna	9	140	4	46	0	3	10	127	0	8	0	2	9	213	0	2	0	0	100
Kilinochchi	1	11	1	6	0	0	1	10	0	39	0	2	2	18	0	1	0	1	75
Mannar	2	56	0	7	0	1	1	7	0	8	2	10	1	19	0	1	0	0	100
Vavuniya	1	19	1	3	1	12	0	2	0	3	0	14	0	0	0	1	0	0	50
Mullaitivu	0	3	1	4	0	1	0	3	0	1	0	2	0	4	0	0	0	0	75
Batticaloa	22	399	3	33	0	0	0	5	0	5	0	4	0	0	0	3	0	1	71
Ampara	0	24	0	26	0	0	0	2	0	0	2	11	0	0	0	1	0	0	71
Trincomalee	8	50	4	36	0	1	4	11	0	1	2	13	1	1	0	1	0	0	100
Kurunegala	16	310	8	33	0	4	3	29	0	6	1	38	1	14	2	14	0	1	91
Puttalam	6	233	0	19	0	2	0	2	0	1	0	9	0	6	0	0	0	0	42
Anuradhapu	10	82	2	18	0	0	0	1	0	1	1	29	1	9	2	17	0	0	79
Polonnaruw	1	53	0	10	0	0	0	0	0	0	0	10	1	2	0	5	0	1	71
Badulla	2	61	1	22	0	2	0	7	0	0	0	8	2	9	3	11	0	0	82
Monaragala	5	44	1	14	0	1	1	7	0	0	0	20	1	23	1	16	0	0	55
Ratnapura	24	290	0	54	1	16	2	12	0	2	5	83	0	6	1	33	0	0	67
Kegalle	25	318	3	19	0	2	1	10	0	5	2	22	0	9	12	141	0	0	82
Kalmune	7	91	1	57	0	0	0	4	0	4	0	1	0	0	0	2	0	1	62
SRI LANKA	530	7400	55	590	03	353	34	353	12	125	41	464	30	447	29	385	00	07	80

Source: Weekly Returns of Communicable Diseases WRCD).

*Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.

**Timely refers to returns received on or before 02nd March, 2012 Total number of reporting units 329. Number of reporting units data provided for the current week: 265

A = Cases reported during the current week. B = Cumulative cases for the year.

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