

Cognitive Function

Cognitive function is the term used to describe a person's state of consciousness (alertness and orientation), memory, and attention span. A mental status examination (MSE) is a standard test used by healthcare professionals to measure a patient's overall mental health. Evaluating a patient's cognitive function includes, first of all, measuring their level of alertness and orientation.

Awareness and thinking depend on organized thoughts, personal experiences, emotions, and mental processes, each existing in a special region of the brain. Self-awareness requires sensing this personal stream of thought and emotional experiences. When a person cannot maintain a logical sequence of thoughts, and when this goes along with not being able to pay attention and being disoriented, this describes *confusion*.(1 &#fn108220>)

Alertness measures a patient's awareness of his or her environment and situation. Abnormal states range from confusion to lethargy (tiredness), delirium (confusion), stupor (daze), or even coma. *Orientation* is a person's ability to describe their knowledge of person, place, and time. Asking simple questions such as the patient's name, where they live, the current date or day of the week, or season of the year can be used to evaluate orientation. *Disorientation* is very often linked with organic brain syndromes (for example, dementia).(2 &#fn108221>)

Confusion describes a behavior where there is decreased mental clearness, consistency, understanding, and being able to reason.(1&#fn108220>) Lack of attention and disorientation are the main early signs; however, as the confusion gets worse, there is a decrease of memory, awareness, understanding, problem solving, language, actions, functioning in one's environment, and emotional behavior.

Changes in a person's state of consciousness, such as with confusion, lethargy, and delirium, may be caused by many medical conditions including fever, ischemia (decreased blood supply), trauma, or brain diseases. It may also be caused by some drugs or toxins. Other causes are hypoglycemia (low blood sugar), azotemia (nitrogen waste products in the blood), liver failure, hypercalcemia (increased calcium in the blood), or a lesion that can develop at the base of the brain.

Memory is a person's ability to remember information in the past and the present. Memory is considered the most common and the most important cognitive ability that can be lost. Healthcare professionals may test a patient's memory by asking questions about the history of their present illness or what they had to eat at a recent meal. They may ask a patient to remember three different words, such as a color, a person's address, and an object, then later in the interview, ask if the patient can remember what they were just asked. These are tests of *present or short-term memory*. Questions concerning family history, date of birth, and facts from a person's past test a patient's *past (distant) memory*. Delirium, dementias, amnesia, Korsakoff's psychosis, and anxiety are conditions associated with an impaired memory.(2 &#fn108221>)

Dementias are disorders with symptoms of memory loss and a decrease in cognition and the ability to reason.(3 &#fn108222>) Dementia, sometimes called "senility," is not a part of the normal aging process, and shows that some other disease may be present. Dementia affects a person's ability to be successful in carrying out their activities of daily living.(4 &#fn108223>) Accurate diagnosis of the disease that is present is necessary for treating the dementia properly.

The healthcare professional also measures *attention span* and the ability to concentrate in evaluating cognitive function. They ask the patient to solve a short series of problems such as subtracting seven from 100 in sequence (100, 93, 86, 79, and so on). The healthcare professional may also want to test higher levels of intelligence. These tests evaluate the patient's use of language, the amount of knowledge that they have, their abstract reasoning, and their ability to make decisions.

/The Diagnostic and Statistical Manual of Mental Disorders/, fourth edition, (DSM-IV) is a book that provides a common language for mental health care practitioners to describe psychiatric disorders.(5&#fn108224>) The book also helps the healthcare provider to diagnose the mental illness. Sometimes the Mini-Mental Status Examination (MMSE) is used, which is a 30-point set of test questions to measure cognitive function.

Alzheimer's disease is the most common cause of dementia, accounting for over 60 percent of all cases.(6 &#fn108225>) Loss of memory is the typical complaint of the Alzheimer's patient. Minor memory loss, sometimes called age-associated memory impairment, is a common complaint of normal aging and should not cause concern. However, if this minor memory loss affects social or job functions, or is noticed by friends and coworkers, patients should be encouraged to visit a healthcare professional to be evaluated.(1 &#fn108220>) Loss of memory in patients with

Alzheimer's disease usually includes a problem remembering and using information already learned and experienced. Patients are usually upset by not being able to remember recent events, or with their confusion about time.

Other causes of decreased cognitive function with dementias, happen because of a lack of proper nutrition in the diet.^(7 𛙅>) A lack of thiamine (vitamin B1) is known to cause Wernicke's encephalopathy (a condition of memory loss and other symptoms due to vitamin B1 loss from alcoholism). Such a patient has malnutrition, confusion, ataxia (loss of muscle coordination), and diplopia (double vision). A severe lack of vitamin B12, folic acid, or omega 3 fatty acids may cause dementia due to damage to nerve fibers in the brain. A lack of vitamin B3 (niacin), which causes the disease pellagra, and vitamin B6 (pyridoxine) may cause spastic paraparesis (a type of paralysis), peripheral neuropathy (a condition affecting the nervous system), fatigue, irritability, and dementia. This syndrome has been seen in prisoner-of-war (POW) camps.

Toxic substances known to produce dementias include an overdose of narcotic drugs, heavy metals, dialysis dementia (from aluminum), and other organic toxins. Dementias that happen because of a lack of certain vitamins or dementias that happen from poisonings can usually be treated.

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