

# मानव व्यवहार पर तनाव का प्रभाव एवं प्रबंधन



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संपादक



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संपादक : डॉ. पद्मा आचार्य

ISBN : 978-81-949767-1-4

वेबिनार में प्राप्त शोध पत्रों/आलेखों का प्रकाशन

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प्रकाशन वर्ष : मार्च 2021

संस्करण : प्रथम

सर्वाधिकार : शासकीय स्वशासी कन्या उत्कृष्ट स्नातकोत्तर महाविद्यालय, सागर, म.प्र.

प्रकाशक : एन.डी. पब्लिकेशन, नई दिल्ली, मो. 9039390856  
अक्षर संयोजन एवं प्रिंटिंग : एन.डी. पब्लिकेशन, नई दिल्ली

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## **NUTRITION AND MENTAL HEALTH**

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The word stress is defined by the Oxford dictionary as a state of affair involving demand on the physical or mental energy. A condition or circumstances stress is defined as perturbation of the body homeostatic .this demand on mind body occurs when it tries to cope with incessant changes in life. A stress condition seems relative in nature, extreme stress condition are detrimental to human health but in moderation stress is normal and in many cases proves useful. Stress is nonetheless is synonymous with negative condition .today with the rapid diversification of human activity we come across with numerous causes of stress and the symptoms of stress and depression.

In a challenging situation, the brain prepares the body for defensive action the flight or fight response by releasing stress hormone namely corticosterone and adrenaline. these hormones raised the blood pressure and the body prepares to react this situation. with a concrete defensive action flight response the stress hormone in the blood get used up entailing reduced stress effects and symptoms of anxiety.

When we fail to counter a stress situation flight response the hormones and chemicals remains unreleased in the blood stream for a long period of time .it results in stress related physical symptoms such as tensed muscles ,unfocused anxiety, dizziness and rapid heartbeats. We all encounter various stressors in everyday life which can accurate if not releases. Subsequently it compels the mind and body to be in an almost constant alarm state in preparation to fight or free. This state of accumulated stress can increase the risk of both acute and chronic psychosomatic illness and weaken the immune

system of human body.

Stress can cause headaches irritable bowel syndrome eating disorder allergies insomnia backaches frequent cold and fatigue to diseases such as hypertension asthma diabetes hear ailments and even cancer.

### **NUTRITION AND MENTAL FUNCTION**

All the sense organs (and other limbs) in our body take their orders from the brain through an elaborate nervous system. Mental health therefore becomes very important for maintenance of physical health. As important as the brain is the health of the nerves that conveys and dictates the brain to the individual organ.

#### **Macronutrients on brain function:**

#### **NEUROTRANSMITTERS**

Considerable research has shown concentration of some of the neurotransmitters in the brain are influenced by the diet. Neurotransmitters are the substances present in the neurons of mammals that, when released, will transmit signals across synapses to other neurons in the brain or to muscle cells or secretory cells outside the brain. Four primary amines are serotonin, dopamine, norepinephrine and acetylcholine, which are synthesised from amino acids. \*Dopamine and norepinephrine are synthesised from tyrosine and phenylalanine [phenylalanine is metabolized to tyrosine], serotonin is synthesised from choline.

Food consumption influences the levels of tyrosine, and choline and tryptophan in the brain, and the brain's synthesis of the neurotransmitters depends on the level of these precursors. However, the relationships are not direct, since insulin is involved in the control of serum levels of amino acids.

A high-protein meal increases brain tyrosine level and brain dopamine accumulation. It does not elevate the concentrations of brain tryptophan and serotonin. A high-carbohydrate or protein-free meal will increase the brain tryptophan level and thus the serotonin



level. A protein that contains high levels of choline, such as eggs or meat, will increase the concentration of brain acetylcholine. An increase in the level of brain neurotransmitters will be physiologically significant only if it is also correlated with a change in the amount of neurotransmitters secreted into synaptic clefts. Whether or not this occurs is still not known. However, concentrations of brain neurotransmitters are already being manipulated with clinical effect. For example, most authorities agree that drugs that block dopamine receptors are useful in treating psychoses, and drugs that stimulate these receptors are being used to treat Parkinson's disease. Drugs that increase brain norepinephrine levels in synapses have antidepressant effects. Tryptophan and choline themselves, as isolated proteins, and not as part of the diet, are also being used. This "precursor therapy" has been tried in treatment insomnia, depression, Huntington's chorea and tardive dyskinesia. Tryptophan at bedtime appears to be an effective agent. Perhaps drinking the traditional glass of hot milk [carbohydrate] increases the tryptophan level in the brain and is really a rather scientific practice.

The brain produces potent chemicals called the neurotransmitters, which are made of nutrients from food. As a general rule, neurotransmitters are produced from amino acids, which are the building blocks of the proteins in the foods that one eats. Some studies have shown that the manufacture and release of neurotransmitters in the body can be altered to some extent by certain foods, meaning that in theory, diet can affect the way one feels and behaves. Any specific cause and effect is difficult to define, as age, sex, some foods and medicines that one may be taking or familial factors can also affect the chemical reactions of the brain. An amino acid called tryptophan found in protein rich foods such as meat, milk and eggs, is a component of a soothing neurotransmitter called serotonin. Serotonin is needed for normal sleep, and some experts think that it may play a role in controlling certain types of depression. It

has been claimed that meals rich in carbohydrates (sugars and starches) help to increase the levels of serotonin in the brain making a person feel calm and drowsy.

Deficiency of niacin causes changes in the entire personality. Persons formerly strong, courageous and unafraid could become cowardly, suspicious and apprehensive. They become emotionally unstable and forgetful. If the deficiency is allowed to become more severe, mental dullness, depression, hostility or suspicion may grow in intensity. In pellagra sufferers, these symptoms gradually give way to actual violence, disorientation and delusions. Such persons often become hopelessly insane. Dr. Abraham 1-loffer was the first to discover that massive amounts of niacin amide could help person suffering from schizophrenia. The richest sources of niacin amide are yeast, liver and wheat germ while kidneys, fish, muscle meats, eggs and nuts supply sonic. A little niacin amide can be made in the body from the amino acid tryptophan, but this supply is limited. Sources have been mentioned elsewhere in this section. Cholin is considered as one of the brain's major chemical messengers. The richest sources of cholin are liver, brain, kidneys, yeast, wheat germ and egg yolk.

Vitamin D aids the absorption of calcium, which is needed for relaxing nerves, inducing sound sleep and decreasing the sensitivity to pain. Fish liver oil is a good source of vitamin D and sunshine is an excellent source of this vitamin. Vitamin E allows people to live longer on remarkably little oxygen, with fewer palpitations and for less oxygen states Adelle Davis. Similarly, athletes or trekkers in rarefied air have more and far greater endurance after taking vitamin E. Vitamin E capsules (200 units) taken after each meal, has proved to be a pain reliever and quick healer of burns. Thus deficiencies of vitamin E can lead to early onset of old age and in children can cause anemia along with other nutrient deficiencies. Vitamin E is found in all grams, nuts and seeds and also oils and wheat germ.



### Toxins and Mental Health

It is quite alarming to find that a few heavy metals have been implicated in brain damage. Aluminium is implicated in a variety of ways as a cause of Alzheimer's disease as it is associated with dementia. Though it is yet to be conclusively proved, aluminium has been found in patches in the brains of people with Alzheimer's disease. It is cautioned that aluminium vessels are not used for cooking acidic foods. It is also worthy of noting that silicon in the form of silisiliic acid prevents the body from absorbing aluminium. Sources of silicon include alfalfa cabbage, lettuce, onions, dark green leafy vegetables and milk.

Nervous system is the most sensitive one to the effects of lead, Children and young adults are particularly vulnerable to cerebral involvement in lead poisoning. The three types of acute encephalopathy, convulsion, coma and delirium are the most serious manifestations, and are irreversible. Risk increases with repeated exposure. Sub clinical and chronic encephalopathy result in slowness of performance, psychomotor disturbances, low intelligence and personality changes. Mercury is very poisonous and long-term exposure causes brain damage. Shellfish, which has an exceptional capacity for accumulating mercury and cadmium from contaminated waters in industrial areas, may contain dangerously high levels. In fish and shellfish rigorous standards and monitoring are needed to ensure no risk. Small amounts of lead can accumulate silently increasing the tissue concentrations to toxic levels. Prenatal exposure to even low levels of lead from mother is capable of producing adverse neuropsychological effects in the otherwise normal offspring. Children are three times more prone to lead toxicity as compared to adults because they tend to absorb lead in higher amounts. In adults, the lead poisoning pronounces itself with abdominal pain, fatigue, muscular pain and neuralgia. Studies on lead suggest that 6-18% of the oral lead intake appears in the blood. Long-term exposure to lead through

vehicular pollution and lead pencils has been linked with behavioural problems and poor learning ability among children.

### Stress

Stress affects the body, mind, feelings and behaviors leading to poor concentration, vague anxiety, fears for no apparent reason, and periods of irritability followed by depression and lethargy. Certain nutrients are used up more quickly under stressed conditions. Extra B vitamins are needed for a healthy central nervous system and vitamin C and zinc for resistance to infection. These extra requirements can easily be met by eating plenty of B vitamins, to release energy and to maintain a healthy central nervous system. Green leafy vegetables, potatoes, fresh fruits, wheat germ, whole grain cereals, eggs, dairy products, yeast extract, seafood, lean meat, liver, kidney, poultry, pulses (peas, beans and lentils) nuts, seeds and dry fruits are good sources of B vitamins. Pantothenic acid is especially important in preventing stress, stimulate feelings of anxiety, while vitamin C helps the body to resist infection and aids wound healing, It is found in fresh fruits, especially citrus and black currants, fruit juices and fresh vegetables. Zinc is also needed for resistance to infection and wound healing and is found in liver and red meat, egg yolk, dairy products, whole grain cereals and seafood, particularly oysters and other shellfish. Complex carbohydrate boosts energy and calms the mind. Legumes, pulses, cereals, oats, and potatoes are all good sources of energy. Small frequent meals (at least every 3 hours) peaceful meal time, no rushed meals, relaxed mood at meal times and joyous meal are important to combat stress. Excessive amount of tea and coffee rather than calming stress. Smoking and alcohol are enemies as they deprive the body of valuable nutrients. Long term use of alcohol leads to depression.

Some of the foods that help to regulate the mood of a person are as follows: