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IMPORTANCE OF THE STATUS OF MIND IN THE FUNCTIONS OF IMMUNE SYSTEM

SANDHYA KUMARI, DR. RAMANAND TIWARI, AYUSHI MISHRA, ABHISHEK KUMAR, DR.ARUNIMA P.S, PRATIBHA SINGH AND DR. PARAMESWARAPPA S. BYADGI

ABSTRACT

The purpose of this article is to understand the role of mind in the immune functions. Eastern and Western view describes that the mind is the processes or activities rather than a substance, or a set of static entities, such as ideas. Eastern philosophy mentioned that various characteristics of 'Manas'is described elaborately. Western psychology mentions the various characteristics of 'Mind' vividly. Both philosophies accepted that mind plays an important role in the functions of immune system. Elevated mood that and positive thinking greatly influences the immune system functions. Altered psychological behavior declines immune functions and exacerbates the disease pathogenesis.

Keywords: Eastern Philosophy, Western Psychology, Manas, Consciousness, Immunity, Mind, Chetna.

INTRODUCTION

Concept of Mind:

***In Indian Perspective-**

'Manas' word came from Sanskrit root, "MANA JNANE", which is taken in the meaning of "TO THINK", "TO ANALYSE" "TO ANTICIPATE". THE "MANAS" is an important component of life entity, classically termed as AYU, which also contains other three components as described by Charaka viz, sharira, indriya and atma. "Health" defined to a harmonious functioning of all these four components leading to a physical, sensorial, mental and spiritual wellbeing of an happy life and to become the well wisher of society.(Kumar Jitendra1 , Gond Pushpa2 and Byadgi P.S., 2015)

Synonyms of Manasa: - sattva, citta, ceto, hridaya, cetana.

Characteristics Features of Manas⊗ Kumar Jitendra1, Gond Pushpa2 and Byadgi P.S., 2015)

1) Acetana (unconscious)
2) Kriyawan (active)
3) Dravya (substance)
4) Ekatva (oneness)
5) Anutva (subtle)
6) Panca bhautika (material)
7) Ubhayendriya (organ of sensation and action)
8) It has trividha bal (manobala-pravar, avara, madhyama)
9) Trigunatmaka (three dimensional having sattva, rajas and tamas)
10) Antarendriya
11) Atindriya(subtle, beyond perception)
12) Indriya
13) Prana
14) Sukshma sharira
15) it is also seat of disease
16) It has five vrittis
17) It has five levels: chitta bhumis
18) Its main function of thinking

19) It is located in brain, heart as well as all over the body.

The Site of Manas-

In general, the manas pervades all over the sentient parts of the body. Prof. R.H. Singh in 'ayurvediya manas vigyan' a wrote that classically Hridya (emotional aspects), Manas (psyche), Medha(intellect), Shirsa(skull with brain) and Mastulunga (brain), all those terms refer to the brain and its Psycho functional aspects is the seat of manas.(Kumar Jitendra1 , Gond Pushpa2 and Byadgi P.S., 2015)

Function of manas-(Kumar Jitendra1, Gond Pushpa2 and Byadgi P.S., 2015)

1) Chintan
2) Vichara
3) Uhya
4) Dhyana
5) Indriya nigraha
6) Sankalpa
7) Yat kincit
8) Kalana
9) Sva-nigraha
10) Swapna

Qualities of Manas-

Sattva, rajas and tamas are three basic gunas of the manas by virtue of which an individual presents with sattvika, rajasik and tamsik type of manas prakriti. The trigunas are responsible for each and every psychophysiological event in an pleasure, correct knowledge and light, rajas is responsible for functional entity of an individual and tama for inertia and darkness(14:5:79). Charaka described two special characteristic of manas- Anutva (minute) and ekatva (one).

1) Anutva- manas cannot be perceived by senses and it is minute and subtle hence it is termed as Anutva.
2) Ekatva- manas performs only one action at one time hence it is said to be characterized by Ekatva guna.(Kumar Jitendra1 , Gond Pushpa2 and Byadgi P.S., 2015)

***In Western Perspective-**

In western perspective, all cognitive process like thinking, perception, sensation, memory, learning is called mind in western psychology. The famous psychoanalyst Sigmund Freud given the three level of mind- the preconscious, conscious, and unconscious. Freud believed the that unconscious mind behind of our all behavior. He told our personality is the result of our unconscious mind. (https://www.verywellmind.com/)

CONSCIOUS

we are currently aware of which things, is called conscious mind. It is somewhat akin to short-term memory and is limited in terms of capacity. Our awareness of our self and the world around us are part of our consciousness. The level of conscious mind is following (Cherry k., 2020)-:

- **Level 1:** Survival consciousness. ...
- **Level 2:** Relationship consciousness. ...
- **Level 3:** Self-esteem consciousness. ...
- **Level 4:** Transformation consciousness. ...
- **Level 5:** Internal cohesion consciousness. ...
- **Level 6:** Making a difference consciousness. ...
- **Level 7:** Service consciousness. ...
- Full-Spectrum consciousness.

Preconscious- The preconscious mind, also known as the subconscious mind, includes things that we might not be presently aware of but that we can pull into conscious awareness when needed (Cherry k., 2020).

Unconscious- In Sigmund Freud's psychoanalytic theory of personality, Freud laid more emphasis on the unconscious mind. He told that our unconscious mind is full of unwanted needs, fantasies, perception, urge, sensations, feelings, desires, dreams there are buried. Our unconscious mind dominates us. The unconscious mind is responsible behind our all behavior. The immoral things that we cannot reflect in our behavior are repressed in the unconscious mind. Then these repressed things try to come again and again in our consciousness. We don't aware about it. That's why, according to freud, the unconscious mind influence individuals behaviour and personality (Cherry k., 2020).

The Iceberg Metaphor

The Iceberg Metaphor is an important principle of Freud's theory. In this theory, he compared our unconscious mind to a cube of ice. Just as icecube does not sink when put in a glass of water, it floats. The upper part of the ice floats in the water. The rest of the boot is under water. The part that is submerged, Freud compared it to the unconscious mind. The part of icecubes that floats on the surface of the water is called conscious mind (Kendra Cherry, 2020).

In William James's *The Principles of Psychology* (James, 1890), the concept of unconscious mentality is considered in terms of its role as a necessary concomitant of what James calls the mind stuff theories by which he means theories that regard mental states as empirically analyzable compounds (Kendra Cherry, 2020).

Collective unconscious term used by Karl Jung. According to Jung, the collective unconscious is very common in all individuals. It is also called 'objective psyche'. The collective unconscious is the result of person to person inherited. It is like a group experiences. Collective Unconsciousness is a process of transfer generation to generation. It includes the beliefs, feelings, rules, norms etc. It's play important role in our personality (Mens Sana Monogr, 2011).

Immunity

Immunity means, the body's ability to fight diseases. Every day the individual comes in contact with different types of viruses, bacteria etc. There are antigens on the surface of the skin, which prevent these bacteria and viruses from entering the body. These antigens also protect the body by developing the body's defense system to fight those bacteria and viruses and for the body's immunity (https:// ecampusontario. pressbooks.pub/immunizations).

There are several types of immunity, such as innate, passive and acquired/active immunity system. The active immune system starts functioning as soon as a germ or a virus or bacteria is attacked in body. In passive immunity, immunity is taken antibodies from another person (https:// ecampusontario. pressbooks. pub/immunizations).

Innate Immunity: - It is innate immune in the individual. A person is born with, including physical barriers (skin, body hair), defense mechanisms (saliva, gastric acid), and general immune responses (inflammation). It works quickly to protect against germs. It works quickly to protect against germs, virus, bacteria etc (https://ecampusontario.pressbooks.pub/immunizations).

Passive Immunity: - It is the body's capacity to resist pathogens by "borrowing" antibodies. For example, antibodies can be transferred to a baby from a mother's breast milk, or through blood products containing antibodies such as immunoglobulin that can be transfused from one person to another. The most common form of passive immunity is that which an infant receives from its mother. Antibodies are transported across the placenta during the last one to two months of pregnancy. As a result, a full-term infant will have the same antibodies as its mother. These antibodies will protect the infant from certain diseases for up to a year, and act to defend against specific antigens. Although beneficial, passive immunity is temporary until the antibodies are gone (wane), since the body has not produced the antibodies (https:// ecampusontario. pressbooks.pub/ immunizations).

Acquired (Adaptive) Immunity: - It is a type of immunity that develops from immunological memory. This immunity can developed through vaccination. This can happen due to exposure to a disease. When medicines are given for this disease, then the body develops antigen (https:// ecampusontario. pressbooks.pub/immunizations).

Parts of the Immune System

Many cells work together to protect the body. White blood cells, (leukocytes) play an important role in our immunity. Some other white blood cells like- Phagocytes(FAH-guhsytes), Lymphocytes(LIM-fuh-styes) protects our body from bacteria. **neutrophil** (NOO-truh-fil, the another type of phagocyte, which fights and kill the bacteria. When someone suffering from any bacterial infection, doctors may instruct for a blood test to identify if it generate the body to have infinite neutrophils. The another type pf phagocytes do ther own work to assure that the body responds to attacker (https://www.cancer.gov/publications/dictionaries/cancer-terms).

There are two types of lymphocytes-

a) B lymphocytes

b) T lymphocytes

The lymphocytes starts in the bone marrow and stay here and grown up into B cells, or go to the thymus gland to grown up into T cells. B Lymphocytes is just like the body's army system. They finds their quarrel and send protection to lock onto them. T cells are just like a fighter, they smash the attacker that the intelligence system finds.(https://www.cancer.gov/publications/dictionaries/cancer-terms)

Immunity Works-

When the body senses foreign substances (called antigens), the immune system works to identify the antigens and eliminate of them. B lymphocytes are provoked to make **antibodies** (also called **immunoglobulins**). These proteins clasp onto specific antigens. After they're build, antibodies generally stay in our bodies in case we have to fight the same germ again. That's why someone who gets ill with a disease, like chickenpox, normally won't get affected from it again. This is also how booster injection (vaccines) preclude some diseases. An immunization introduct the body to an antigen in a way that doesn't make someone ill. But it does let the body produce antibodies that will protect the person from future attack by the bacteria.(Larissa Hirsch, 2019)

Although antibodies can recognize an antigen and clasp onto it, they can't kill it without help. That's the work of the T cells. They annihilate antigens mark by antibodies or cells that are infected or somehow changed. (Some T cells are actually called "killer cells.") T cells also help alert other cells (like phagocytes) to do their works (Bhattacharya S., 2013).

Antibodies Also Can

- Neutralize toxins (poisonous or damaging substances) construct by different organisms.
- Activate a group of proteins called **complement** that are part of the immune system. Complement helps kill bacteria, viruses, or infected cells.

These specified cells and parts of the immune system offer the body defence against disease. This defence is called immunity (Bhattacharya S., 2013).

MIND AND IMMUNITY-

Mind plays important role in immunity. Immunity is affected by mind. Brain activity connecting negative emotions to a lower immune response against disease has been released for the first time, claim researchers. Many previous researches have shown that emotions and stress can negatively affect the immune system. But according to Richard Davidson, it is not directly affected to the brain. It is shown in various studies, the prefrontal cortex (PFC), is associated with depression. People who had the greatest activity in the right prefrontal cortex when asked to dwell on distressing phenomenon in their life had a remarkedly lower antibody levels after an influenza vaccination.

Oppositely, those showing rare activity in the left PFC when recalling happy times developed high antibody levels (Bhattacharya S., 2013).

According to Davidson, "Emotions play an important role in regulating systems in the body that influence health". "This research have been prove that people with a pattern of brain activity, that has been connected with positive [emotions] are also the ones to show the best response to the flu vaccine." "It begins to recommend a mechanism for why people with a more positive emotional disposition may be healthier," he says (Bhattacharya S., 2013).

Intense Sadness

Davidson, with colleagues at Wisconsin and Princeton University, New Jersey, requested 52 men and women who graduated from Wisconsin in 1957 to recount both the best and worst events in their lives on paper.

For their best experiences, the subjects were requested to write about an incident where they feel "intense happiness or joy". And for their bad experience they were requested to memorize an incident causing "the most intense sorrow, unpleasent fear, or anger" (Bhattacharya S.,2013).

During this autobiographical assignment, the electrical activity of the brain was assessed. The subjects were then given flu shots and their antibody levels were assessed after two weeks, four weeks and six months. The researcher found a clear connection between strong activity in the left PFC and a large rise in antibodies, and vice versa. Alought, this research could not clarify, how having a positive emotion boosts the immune system. The researchers say some evidence exists to suggest a connection between the PFC and the immune system via a complex hormonal function governed by the hypothalamic, pituitary and adrenal glands (Proceedings of the National Academy of Sciences, DOI: 10.1073/pnas).

Some another studies conducted by Italian and UK researchers, also published. According to these studies, "reveals that depressed elderly people have fewer lymphocytes and T-cells – white blood cells crucial for fighting disease". This study is has been published in *Psychotherapy and Psychosomatics (Psychol Bull. 2004).*

As early as 1921, researchers identified that the brain works in different way, immunologically says, "Most of the body part of the body often results in an immunological attack as a result of grafted external tissue; On the other hand the grafted tissue in the central nervous system gives a much less hostile response". Thanks to the blood-brain barrier—tightly packed cells lining the brain's vessels that allow nutrients to slip in but, for the most part, keep out unwanted invaders like bacteria and viruses—the brain is protected for a long period of time as an "immunological was considered to be "privileged", meaning it could tolerate the introduction of external pathogens and tissues. The central nervous system was seen as a separate existence from the peripheral immune system, which was abandoned for its less aggressive immune defense (Psychol Bull. 2004).

Psychological Stress and the Human Immune System: A Meta-Analytic Study of 30 Years of Inquiry
From ancient time, organisms have been subject to evolutionary burden from the contexture. The capability to respond to environmental stressors such as a natural disaster enhanced survival and therefore reproductive capability, and physiological responses that supported such responses could be selected for. In mammals, these responses involve changes that increase the delivery of oxygen and glucose to the heart and the large skeletal muscles. The result is physiological support for adaptive behaviors such as "fight or flight"(sympathetic nervous system) Immune react to stressful conditions may be part of these adaptable reaction because, in addition to the risk internaly in the situation (e.g., a predator), fighting and fleeing carries the risk of damage and afterward entry of virus and germs into the blood or skin. Any lesion in the skin is likely to contain pathogens that could multiply and cause inflammation. Stress-induced changes in the immune system that could accelerate lesion repair and help prevent infections from taking hold would therefore be adaptive and selected along with other physiological changes that increased evolutionary fitness (Stetka B., 2015).

Robert Dantzer has conduct a research. He has found, The concept that the mind can modulate activity the immune system stems from the connection of stresses. current advances in the study of the inter-connection between the CNS and the immunity have demonstrated a huge network of communication pathways between the two systems. Lymphoid organs are envigorate by branches of the ANS. Addition immune cells and lymphocytes have mucosa receptors for most neurotransmitters and neuropeptides. These receptors are operational, and their actuate leads to changes in immune functions, involving cell proliferation, chimiotactism and specific immune responses (Stetka B., 2015). Brain wounds and stressors can involve a number of changes in the oprating of the immune system. All these changes are not certainly mediated by the neuroendocrine system. They may also be dependent on ANS function. The communication pathways that connection the mind to the immune system are normally actuate by indicator from the immune system, and they supply to regulate immune responses. These indicators originate from accessory immune cells act as monocytes and macrophages and they are act for mainly by proinflammatory cytokines. Proinflammatory cytokines released at the periphery work on the brain via two major activities:

(1) A humoral pathway allowing pathogen specific molecular patterns to work on Toll-like recievers in those brain region that are lacking of a functional blood-brain barricade, the presumed circumventricular areas;

(2) A neural pathway, described by the efferent nerves that stimulate the bodily site of contamination and injury. In both cases, peripherally released cytokines motivate the expression of brain cytokines that are released by local macrophages and microglial cells. These locally released cytokines distributes all over the brain parenchyma to work on target brain region so as to methodize the central elements of the immune response to inflammation (fever, neuroendocrine activation, and sickness behavior) (Stetka B., 2015).

Resilience Role in Immunity

Resilience is also very important for immunity. B. R. Sahithya, Rithvik S. Kashyap1 , B. N. Roopesh2 have been conduct a study and they have found, that Resilience was found to be negatively associated with mental illness and immunity. Resilience was lower among those individuals, who have symptoms of common mental disorders, and also among individuals who reported higher levels of distress associated with their problems (B. R. Sahithya, 2019).

The Concept of Manas Roga in Ayurveda-

In Indian perspective, there is a common relation between mind and immune system. In Ayurveda, the evolutionary process of life is a multiplex occurrence and consistently the term of disease specially the mental disorders is also highly complex. Life is a complex union of sharira, indriya, sattva and atma. The mind- body and soul afected each other. However, ghrossy there are two types of desease sharirika (somatic) and manasika (psychic) according to tell location of disease (Stetka B., 2015).

When psychic or somatic disorder becomes chronic due to their intensity, that can get combined with each other. Such combination exceptional occurs when the disorder is demonstrate only for a short time period. Chakrapabni further interprets and elaborates their context and strongly postulates the psychosomatic concept of ayurveda. Recent scholars of ayurveda defines following view (https:// www.ncbi.nlm.nih. gov/pmc/articles):

1) Bodily disease affects to the bodily disease.

2) Mental disease affects to the mental disease.

3) Mental disease affects to the bodily disease.

4) Bodily disease affects to the mental disease.

CONCLUSION

In Indian perspective, mind has been described widely to understand its broad meaning. Westerners also described elaborately like Indian. Hence now a day psychoneuroimmunology has been widely exception and published many research articles on this. The thought process greatly influence on the immune system. Immune system performs its normal functions, while person thinks positively. Cheerful mind and stress Free State is beneficial to recover from diseases as well as to prevent the recurrence of the diseases.

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AUTHOR DETAILS:

SANDHYA KUMARI[1], DR. RAMANAND TIWARI[2], AYUSHI MISHRA[3], ABHISHEK KUMAR[4], DR.ARUNIMA P.S[5], PRATIBHA SINGH[6] AND DR. PARAMESWARAPPA S. BYADGI[7]

[1,3,5,6]Research Scholar, [2]Associate Professor, [4]Junior Resident and [7]Professor, Department of Vikriti Vigyan, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University Varanasi, India