Living longer living happier: My journey from clinical neurology to complexities of brain

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Abstract

The present article is a treatise on the illuminating voyage of a Neurophysician along the fascinating horizons and frontiers of neurosciences. During the career as a clinical neurologist, some very interesting and intriguing cases and issues were dealt with and documented scientifically. The working of the brain and its operational architectonics came up for critical analysis, opening up new vistas in the appreciation and management of various neurological disorders. Issues regarding the working of the mind and the guidelines for health and happiness became apparent, and some very interesting generalizations with far-reaching consequences on the general well-being and health have been formulated and put forward for a closer and better appreciation of neural dynamics at all levels of the brain, namely microscopic, mesoscopic and macroscopic levels!

Key Words

Happiness, Brain-Mind-Body, Longevity

Mr. Chairpersons – the distinguished gathering of neurologists, postgraduates, ladies and gentlemen, as I stand here for delivering the prestigious Presidential Oration, I cannot think of anything more than paying regards to the stalwarts in Neurology, my teachers, my colleagues and my postgraduates, who always kept me abreast in the development of neurological sciences. I decided to dwell on an issue that opens up exciting dimensions and realms of science intermingling and espousing the horizons of philosophy on the lines of the fundamentals of patient care based on medicine as a practice of science and art, elaborating the core theme of my discussion on exploring the strength and potential of the brain and mind for health, longevity and happiness.

The Neurologists have a typical history of discussing site and nature of the lesion, going through the phase of the hammer and ophthalmoscope and, finally imaging and electrophysiology. The lucky ones go beyond the mundane and delve into academics and be part of the academic crowd experimenting, observing and documenting their findings in the scientific arena, trying to find answers to the why and how of nature’s intriguing and inexplicable phenomena day-in and day-out. To keep myself in this crowd, I too, with my team, published quite a few papers on different neurological diseases. Those which got international prominence were on neuromyotonia, neuroleptic malignant syndrome, isolated unilateral tongue paralysis and low-dose valproate therapy in epilepsy.

Much later, during the 30 years of my professional career as a Neurologist, I witnessed many curious and exciting phenomena, which defined scientific rationale. Many of them could have been anecdotal, but they opened new vistas of research and analysis in the neurological sciences, and I became interested in Neurotheology. The three interacting and intermingling axes that primarily determine the said issues of health and happiness are, namely genetics (including the longitudinal and lifestyle aspects), destiny and the mysteries and resources of the Brain, working on the dictates of Hippocrates’ *The Natural Healing Power of the Mind*. About a decade ago, sometime in 2001–2002, I was invited to the India International Centre, New Delhi, to talk on the alluring and absorbing prospects of Brain and Health, which was, later, published. It was in this period that I realized that Neurology is not just the science of disease but Neurologists are in an excellent position to probe further into the intricate nuances of the ‘Abstract’ for its potential and strengths, the amazing and elusive nature of Brain and Mind.

I started questioning myself whether there was anything beyond the defined limits of medicine and science? Moreover, would an increased scientific understanding of the brain, accommodating the mechanisms of mind, help in unravelling and unfurling the still obscure and elusive phenomena that have intrigued the mankind since time immemorial? Would modern technical
advancements help in the deeper exploration and insight into the intricacies of the human mind? With these questions, I started venturing into these territories that are relatively abstract and quite vague for a scientifically and technically trained mind of the present-day Neurologist, who is usually restricted to the science of the disease only.

Another question that simultaneously kept on challenging my mind was the current world health and happiness scenario, which has been quite disappointing. And this too, in an era, which has been called the Decade of the Brain (1990–2000). The 21st century dawned in front of us and swept us off our feet with its huge and amazing technical, scientific, economic and material advances; yet, this period has witnessed immense decline in the quality of life in terms of health, happiness and contentment.

Because of the ready availability and exposure of information and knowledge, the present-day generation has furthered its academic intelligence levels, although the other intelligences, namely emotional intelligence and social intelligence, which too correlate with the health of a person’s mind, have failed to keep pace with it. The disease patterns have shown a changing pattern worldwide. A host of lifestyle-related diseases, e.g., peptic ulcers, cardiac diseases, sexual dysfunction, etc., are common place in the present generations, which were quite unheard of just a few decades back. The roots of most of these disorders can be traced back to the underlying stress pervading the society as a whole.

It is indeed pertinent to delve into the issues responsible for the seeming discrepancy between the overall enhanced standards of living and affluence of the people and the status of mental health and happiness. A missing link, lost somewhere in this race of advancement, needs to be evinced and explored in its totality!

This paradox started intriguing me, and I found myself analyzing a few people whom I have known closely and whose lives have been models of health, longevity and happiness. The reasons that led them to a fulfilling and meaningful existence even in the face of adversities could be attributed partly to their predestined genetic profile, their chaotic environs or some other hitherto mystic factors. However, an in-depth analysis revealed that these people shared some common patterns in their lifestyles, namely keeping a healthy positive and solution-seeking attitude, which allowed them to tap into the resources of their brain and make the most of it, as was reported almost two centuries ago by Adams in 1891 while working on the dictates of Hippocrates’ The Natural Healing Power of Mind.[3]

With these ideas, I began to probe the potential of the mind that lies beyond the confines of the familiar brain – a physical and physiological structure for us neurologists. During this quest, I could find logical and scientific explanations for connections between the brain and the mind, which form the basis of the present discussion.

The Physical Brain: An Amazing Structure

The brain is a unique organ of the body. While it constitutes only 2% of the body weight,[2] it receives 20–25% of the cardiac output, consumes 20% of the oxygen[1] and glucose supplies,[4] utilizes 50% of the overall gene pool and has neurons equal to the number of stars in the “Milky Way.”[5,6] This amazingly complex structure is also the greatest generator of electrical energy. The brain is a unique organ with structured laterality, with the left hemisphere responsible mainly for language and logistic skills and the right hemisphere initiates the emotions of pleasure, relaxation of meditation and sexual orgasm, and is dominant in taking the individual at higher levels of consciousness, connecting with space as a step toward further relationship with all the dimensions of the universe.

While the left cerebral hemisphere is predominantly concerned with logical, verbal, analytical and calculative aspects of human intelligence, the right hemisphere deals with the imaginative, emotional, artistic and visuospatial traits.[7] The wonderful synergy between the functions of the right and left sides of the brain provides a huge resource for potentially beneficial connections.

The Triune Brain

The triune brain (popularized by Carl Sagan’s Pulitzer prize winning 1977 book, The Dragons of Eden)[8] is the archetype of evolution of the vertebrate forebrain and behavior proposed by the American physician and neuroscientist Paul D. MacLean way back in 1970.[9] MacLean in 1973 put forward a beautiful concept of exploring the mysteries of the brain, the model of “Triune Brain.” According to the model, the present day human brain phylogenetically evolved and developed into three separate distinct biocomputers, each with its own genetic programming, consisting of the reptilian complex, the paleomammalian complex (limbic system) and the neomammalian complex (neocortex), viewed as structures sequentially added to the forebrain in the course of evolution. The reptilian complex, also known as the R-complex or “reptilian brain,” was the name MacLean gave to the basal ganglia, structures derived from the floor of the forebrain during development and responsible for the physical state of housekeeping for the species’ typical basic survival instinctual behaviors involved in fight, flight, fright reflexes, aggression, reproduction, dominance, territoriality and ritual displays. The paleomammalian complex, also known as the Emotional and Societal Brain – the proposed epicenter for social intelligence, is responsible for the feelings of love, hate, fear, pleasure, sexual satisfaction, jealousy, social attachment, etc. The neomammalian complex represents the cerebral neocortex, a structure found uniquely in mammals subservient to the intellectual and spiritual pursuits. MacLean regarded its addition as the most recent step in the evolution of the human brain, conferring the ability for language, abstraction, planning and perception. The neocortex evolved on the time scale frame of the evolution of mankind, modulating higher mental and cognitive functions, logic and judgment.

The neomammalian cortex is the most advanced, the largest and most arborant, but is most underutilized. We spend our lifetime in satisfying the needs of the societal brain, influenced by consumerism and industrialization, and hence the miseries of lifestyle-based diseases and declining happiness. In my opinion, the amygdala has been envisaged to play an important role in the operational architectonics of the three distinct entities of the
triune brain. While being separate, the three are connected and can influence each other, based on their individual strengths, and can execute or inhibit accordingly. Thus, if intelligent, the neocortex is strong enough to inhibit the societal brain and vice versa. The nature has in turn provided us the intrinsic ability of remodelling ourselves. Amygdala, being the seat of emotional memory and being placed strategically, is the “Click Switch” for to and fro transfer of energy in the various brain systems.

The Mind Within The Brain

Science has rejected the reductionist dualistic theory of Descartes. While it is a herculean task to define mind, and there are umpteen descriptions, according to me mind, unlike the individualized biocomputer of The MacLean’s Triune Brain, is diffuse, breaking the barriers of compartmentalization and structurally imposed boundaries of the morphological brain with the capacity of crosstalking.[6,11]

Mind of a man is the very recent product of billions of years of cosmic and biological evolution, and would suggest that mind is a more abstract concept, best defined as an electrical and chemical neurocircuitry connecting the three phylogenetic brains. The mind deals with the content of the self and reacts emotionally to external environment and the internal thought processes, in relation to either past experiences or future imagination.

Mind Neurocircuitry

There are 100 billion neurons, each forming dedicated circuits with trillions of synapses. The beauty of nature is immense, wherein it seeks and provides specialized neurons from its armamentarium of alfa, canonical and mirror neurons committed to planning, data transfer, imitation and social intelligence.

The electrical communication between neuronal networks is responsible for the rapid processes of thought and imagination. Neurons fire at the rate of 5–50/s, and the usual thought processing time is just 320 ms.[12] Neurotransmitters are the chemical means of communication between the neurons that are diffusely distributed. There are hundreds of neurohormones, neuropeptides and neuromodulators, but a few among them are most important and well-studied, e.g., dopamine, serotonin, acetylcholine, γ-amino-butyric acid (GABA) and glutamate.

Neurotransmitters

Neurotransmitters are the key to the functioning of the brain and have selective cerebral predominance. They determine the personality traits and are also responsible for creation of brain waves. The functions of neurotransmitters are diverse and diffuse, but they have selective predominance.

The frontal lobes have dopamine in abundance, which creates the predominant beta rhythm of these lobes and is responsible for alertness.[13] The main neurotransmitter of the parietal lobes is acetylcholine, which is responsible for the creation of alfa rhythm, and determines the thought-processing time and the speed with which the brain works.[14] Temporal lobes abound in GABA, which produces theta waves and generates a natural analgesic, tranquilizing and a calming response in the mind,[15] while the occipital lobes are serotonin-rich, which creates delta waves responsible for the deep sleep stages. The prefrontal lobes are rich in glutamate, which generates the gamma rhythm.[16] These are fast brain waves, 40/s, involved in the highest mental activities like judgment, reasoning, abstract thinking and, finally, creating the spiritual state as I would discuss later. Glutamate excites the fast inhibitory synapses interconnecting the inhibitory neurons thus bringing about convergence of attentional energy toward the desired mental phenomena.

Personality and Neurotransmitters

From the above, it would be worthwhile to deduce that neurotransmitters have a role to play in giving shape to the human personality. The predominance of a certain neurotransmitter also determines the major personality traits. For example, dopamine-based minds (incentive salience detectors) are rational and achievement-oriented (Mahatma Gandhi), acetylcholine makes a person innovative and intuitive (Einstein), GABA-predominant personalities are calm and composed (Guru Rabindra Nath Tagore) while serotonin is responsible for adventure, passion and independence (Edmund Hillary).

Neurotransmitters form the basis of psychoendoimmunoneurology, and the great news is that they are modifiable by diet and exercise. It seems quite logical to decipher that by virtue of these dynamic electrical and chemical connections, the mind has unlimited potential of being modifiable.

Food, Exercise and Brain

Because neurotransmitters are synthesized from amino acids available in the diet, it is interesting to speculate and infer that food sources and nutrition could act as an effective therapeutic modality. Vegetarian diet is rich in GABA, and nonvegetarian is high in acetylcholine, which could be responsible for the differential behavior of the persons taking a specific diet.

Dopamine is found abundantly in walnuts, chicken and cottage cheese. Acetylcholine is present in eggs, whole grain bread, meat, liver, etc. Serotonin is found in cottage cheese, wheat germ, avocado, turkey, etc., while almonds, banana, spinach, walnuts, oats, brown rice, etc., are rich in GABA and flax seed oil is rich in omega 3 fatty acids.[17]

Yoga and aerobic exercises bring about a rise in the levels of dopamine, GABA and acetylcholine levels, while anaerobic exercises build up the serotonin levels in the brain.[18] It can be inferred that a modification in the diet and exercise regimens can in fact bring about a change in the mental processes. It would not be an exaggeration to state that, “You are what you eat”!

Neuroplasticity

Neuroplasticity is the ability of the brain to undergo functionally relevant adaptations by lifelong modifications in neural circuitry. This concept is contrary to the idea of the “Rigid” unmodifiable brain as described in 1913 by Cajal.
Synaptic webs can multiply and provide richer substrates that can induce mental processes. Increased activation of synapses increases gene expression and encoding of trophic factors.[11,19] Thus, the mind has the unique virtue of being malleable and plastic.

The great virtues of the mind, like adaptability, selective inclusion/filtration of information, priority or selective amnesia, diversion, judgment and reasoning, intuition and gut reactions are all attributable to neuroplasticity. The combination of such virtues is the reason for complex acts executed effortlessly and spontaneously.

**Change of Mind Can Change Life!!!**

The mind is capable of creating more connections and synapses across the neuronal fiber pathways. Research[20] has confirmed that the more we use the mind, the more abundant our mental synapses get, and the less we exercise it, the poorer these connections get. USE IT OR LOSE IT!

Positive mental states lead to higher neuronal functions, richer synapses and longer lasting healthy neurons, while depressed and dull spirits cause impairment of cognitive abilities as the neuronal functions reduce and synaptic connections shrink.

An appropriate diet and positive physical and mental activities can modify the chemical milieu of the brain. Thus, neuroplasticity forms the basis for attaining mental states of happier longevity and, finally, spiritualism. When put to proper use, the potential of the brain–mind axis can produce wonders as exemplified by the lives of Kalidas, Valmiki and Ashoka-The Great.

**Psychoendoimmunoneurology**

Brain is the key for facilitating fine-tuned state of balance between the endocrine and the immune system through the chemical transmitters. Acting in tandem under the influence of brain, these are responsible for handling different challenges to maintain homeostasis.

It is a well-established fact that the psychological states also determine the physical health of a person. Happiness and health are complementary to each other. An unhappy mind forms the basis of numerous psychosomatic diseases. This is dependent on the brain endimmune system homeostasis, which is constituted by bidirectional inflammatory responses modulated between neuroendocrine and immune systems. The hypothalamo–pituitary–adrenal immune system interrelationships underlie these responses.[21]

In face of stress, the brain initially generates the “Physiological Stress Response” (“Fight or Flight” response). It is also called the General Adaptation Syndrome.[22] During its first phase, the alarm reaction, all the necessary resources of the body to cope with the stressful situation are mobilized; its second phase involves maintaining the high level of utilization of mental energies and, finally, the third phase sets in, in which exhaustion and depletion of reserves starts occurring. When this state is prolonged, it leads to the “Pathological Stress Response,” which is responsible for lifestyle diseases.

**Neurophysiology of the stress: General adaptation response**

The neurophysiological epicentre of the stress response is the Amygdala, the “Click Switch,” which receives the alarm signal (fight or flight) from the reptilian brain based on past emotional memory experience. The initial compensation takes place through the sympathetic branch of the autonomies. However, if no parasympathetic drive or intervention for relaxation response via the neocortical drive sets in, the amygdala phase of exhaustion sets in, with persistent or recurrent exhaustion ending into or transforming into lifestyle diseases. On the other hand, if one is able to maintain a persistent parasympathetic drive through a persistent neocortical relaxation response, the various stresses and/or stressors of life are better handled. Thus, the Amygdala acts as a cyphonct bureaucrat who acts on the whims and fancies of his political masters, the Neomammlian or the Paleomammalian brain.

Stress and illness generate a response in the cortex, which also influences the limbic system and amygdale, and a host of neurotransmitters come into play to adapt to the stressful event, e.g. Ach (Acetylcholine), 5HT (5-Hydroxytryptamine), IL1 (Interleukin 1), CRP (C-reactive protein), GABA (Gamma-Aminobutyric acid) and NA (Nor-Adrenaline).[21] The hypothalamus reacts by stimulation of CRH (corticotropin releasing hormone) secreting neurons, which stimulates the pituitary to secrete ACTH (Adrenocorticotropic hormone), which in turn causes cortisol secretion by the adrenal glands. The brainstem, locus ceruleus, generates a sympathetic response that leads to fear, arousal and increased vigilance. Cortisol causes the monocytes and macrophages to secrete more interleukins, which stimulate the hypothalamic CRH secreting neurons and a vicious cycle sets in.

The brain has the capability to generate a “Relaxation Response,”[24] which acts as the antidote to “Stress response.” Studies[25] have shown that when men watched a funny video, levels of cortisol fell by 39%, epinephrine fell by 70%, while levels of “feel-good” hormones, endorphins increased by 27% and GH by 87%. An increase in anabolic chemicals, e.g. DHEA (Dehydroepiandrosterone) was also observed. This led to lower blood pressures, reduced stress hormones, increased muscle relaxation and a boost in immune function by raising levels of infection-fighting T-cells, increasing IgG, IgM and IgA, complement levels and triggering the release of endorphins, the body’s natural painkillers.[27] Median forebrain bundle and mesolimbic system are the main pleasure systems of the brain, and are dopamine and serotonin based.[28]

Relaxation activities, feelings of pleasure, happiness, meditation, spirituality and bliss are all brought about by these physiological changes. Over time, individuals who regularly practice the relaxation response have greater resilience to stress and trauma than others.

**Health and Happiness are Complementary**

As Aristotle put it, “Happiness is the meaning and purpose of life, the whole aim and the end of human existence”. Happiness is a positive emotion, an attitude and a state of mind. It is a persistent state of a feeling of well-being. WHO[29] defines health...
as a state of complete physical, mental, social and spiritual well-being, and not mere absence of disease. Happiness is a state of mind and not a destination. According to a large Dutch longitudinal study (1984), happiness increases longevity by about 15–20%. Happiness and longevity have a genetic component, with individual and environmental factors making independent contributions.

**Telomeres, Emotions and Longevity**

Telomeres are the protective ends of chromosomes. They play a key role in cellular ageing. The length of telomeres is a biomarker of age and disease. Every cell division shortens telomere, unless an enzyme called telomerase builds them again.[30] Short telomeres correspond with a greater risk of heart disease, diabetes, arthritis, depression and osteoporosis, and such individuals die younger, while longer telomeres are found in healthier and happier people.[30]

**Emotions: Heaven and Hell**

Brain accommodates both heaven and hell in the form of positive and negative emotions. The brain is a Velcro for negative experiences while Teflon for positive emotions; thus, bad memories stick and good memories are easily forgotten. Those who are able to reverse the process through neocortical influences enjoy peace and happiness. Positive emotions induce anabolic and parasympathetic activity, strengthen the immune system, dampen stress reactivity and lengthen the telomere. Negative emotions, on the other hand, are catabolic and induce sympathetic activity, which if left unchecked and unhindered without the protective umbrella of the parasympathetic, increase the risks of acquiring lifestyle diseases.[31] Neurological researchers have identified biological mechanisms and the neural pathway of the median brain and the mesolimbic pathway of pleasure in human beings. The greatest sources of happiness are power, achievement, recognition and affiliation.

The amygdale–hippocampus system flags negative experiences prominently in memory and negative trumps positive.[32] Negative experiences create vicious cycles. Negative emotions are catabolic, creating a sympathetic drive and when chronic become disease inducing.

However, positive neocortical influences have the capability to inhibit negative influences of the amygdala. Positive cognitive states induce an increase in telomere length and thus an increase in overall longevity. Persistent positive emotions brought on by acts of passion or meditation can create positive cognitive states. Research shows that after meditation, people had significantly higher levels of telomerase, suggesting that their telomeres were being protected.[30] Contrary to this, negative cognitive states like stress may cause the telomere length to decrease.

**Spirituality and Neural Networks**

Spirituality has always been mentioned in a mystical sense – something beyond the purview and premise of neuroscientists, something closer to theologians and philosophers. However, it is being increasingly accepted that religion is intimately interwoven with human biology.[32] I perceive spirituality as the state of mind, wherein the content and quality of consciousness (inner world) is filled with pure positive thoughts, pleasure and relaxation, giving the highest level of contentment, satisfaction and serenity. The state is generally achieved through mindful meditation or through processes of artistic creation, extreme involvement, engrossment in act or thought process of absolute choice.

Three important areas within the precincts of the brain have been posited to be involved in the experience and appreciation of the spiritual state. They are the selective executive network, posterior cortical area involved in orienting network and the limbic/autonomic system. Bilateral prefrontal, anterior cingulate, anterior temporal and orbitofrontal cortices are responsible for the executive functions of the mind.[32] Attention and attentional energy is the key to connect to space and/or time. Executive network enhances perception of target and inhibits distracting noise, both internal and external, inducing parasympathetic relaxation response and glutamate-driven endorphin release and mesolimbic system stimulation, leading to the activation of the state of spiritualism, a state of being pain-free, joyful and euphoric. They inhibit the internal and external noises via the amygdala by suppressing the posterior parietal and temporal network, which is responsible for integration of the various sensory modalities and overall attention and orientation to one’s environment. The limbic system and the autonomic nervous system deal with emotions, pleasure and memory.[32]

**Effects of Meditation on the Brain**

Meditation thickens and strengthens the anterior (frontal) cingulate cortex and the insula. These regions are involved with controlled attention, empathy and compassion; meditation improves these functions.[32] People who meditate have lesser cortical thinning with aging. It increases activation of the left frontal regions, which elevate mood and increase the power and reach of fast, gamma brainwaves. It decreases stress-related cortisol and produces a stronger immune system. This distributed neuronal pool of dorsolateral, prefrontal and parietal cortices, hippocampus, temporal lobe, anterior cingulate, striatum, and pre- and postcentral gyri gets brightened on functional MRI/Positron Emission Tomography studies during the meditation, relaxation and spiritual or religious experiences.[32]

**Divine Experience and Neurobiology**

While meditation is the means, spirituality, like happiness, is a state of mind, where a pain-free, relaxed, joyful state of “Bliss” exists. While spirituality is intensely personal, religion is societal. It is a million dollar question whether the human mind and brain play a role in spiritual contemplation. The study of divine experience and neurobiology under Neurotheology has brought out newer, intriguing and thought-provoking information. A spirituality gene,[32] termed as the “God gene,” encodes for VMAT-2 (Vesicular Monoamine Transporter-2). Hamer found a correlation, not a causal connection, between the presence of this gene variant, VMAT-2 and the characteristic trait of spirituality, self-transcendence. This gene reportedly comes from the person we were in a previous life; smaller than an ordinary gene, it combines with two larger physical genes we inherit from our parents, and together they shape our physical and spiritual
profile. The empirical evidence of a God gene is, in the present-day scenario, suggestive of, and not conclusive of, the biological foundation of spirituality.

The neuroscientists in collaboration with spiritual scientists have defined a “God Module” (in their own reductionist way) in the brain that is responsible for the process of adopting religious beliefs based on intellectual and emotional interactions within the parts of neocortices as discussed above. It has been localized to the anterior aspect of the temporal lobe, the respective mirror neuron system and the amygdaloid complex.[40]

The concept of a reductionist model interacting on the nonlinear operational architectonic model has an intriguing connotation in the Indian scenario. As the religious/spiritual state takes the individual to a higher level of consciousness, it increases longevity and happiness and, despite all odds and adverse environmental circumstances, the various intelligences (academic, emotional, social and God intelligences) correlates, the threshold to adverse reactivity can be increased.

Using the Neurological Science of Mind for Health, Happiness and Longevity

The brain operates on the principles of nonlinear chaotic dynamic state at all levels, namely, the microscopic, mesoscopic and macroscopic levels. Humans have the capacity to influence the electrochemical dynamics of their brain by voluntarily changing the mental processes to positive emotions in relation to self and environment through yoga, biofeedback or complete engrossment (reading, listening to music, watching movies, playing golf or bridge), which stimulate the neurocircuits of the relaxation and pleasure system and inhibit stress circuits in the mind–brain axis!

Science is ever-transforming with evolving time and keeps on getting closer to philosophy as it gets more and more refined. The brain and the ever-changing fluid environment communicate interactively in a bidirectional manner. The developing knowledge offers possibilities that would eventually give an unprecedented ability to engineer changes in the brain, opening up new vistas and horizons in stream of Neurological Sciences, giving rise to brain revolution. Neurologists are in an excellent position to scientifically initiate and take part in this brain revolution.

The General Fundamentals for Good Health and Happiness

Good time management, nonconfrontational problem-solving attitude, forgive and forget attitude, perfection in office and casual approach at home, being pleasant and appreciative, passion for aptitude, low environmental reactivity, a sense of belonging and productive gossiping are the keys to being happy and healthy.

A positive food for thought and a programmed beneficial diet are value additions for preventing lifestyle-based diseases and living a longer, healthier and happier life.[41] A daily stress-free routine is instrumental in leading a healthier, happier and longer life. The following schedule may help to attain a healthy state of mind:

**On Waking Up**
- Remember God, it enhances faith and confidence in self. Take two glasses of water; take five deep breaths, with inhalation through the nose and exhalation through mouth. This should be followed by 10 min of progressive muscle relaxation with some yogic exercises (Pranayama). Take bed tea – black or lemon – with either watching television or going through the local newspaper.
- Breakfast should consist of a high carbohydrate diet inclusive of bread with honey, oats, porridge, upma, halwa with fruits and dry fruits, namely, apple, banana, papaya, almonds, walnuts, sprouts, etc.

**Reaching workplace**
- Reach on time to avoid the flight/fright reaction. Begin your day in the office with a pleasant “Hello” to colleagues. Take a glass of water and start your work with a positive attitude. It is worthwhile to keep fresh and lovely flowers with good fragrance as they bring a fresh feeling and diversion from the monotony of work, which decreases fatigue and improves performance. While sitting for long periods, intermittently raise your feet, walking a few steps within the room while analyzing problems relaxes you. In the busy time schedule, it is important to find time to take deep breaths and perform short progressive muscle relaxation.
- Lunch should be less spicy and oily and rich in salads. It should comprise of whole wheat bread, vegetables, pulses, eggs, chicken, etc. Do not rush. A 30–45 min of afternoon siesta, if possible, is helpful.

**Evening**
- Preferably have a black tea with two low-calorie biscuits. Take a break after office work to relax and gossip. Introspect on the day’s performance.

**Reaching home**
- Take a warm bath if it relaxes you, wear loose clothes. Spend time relaxing according to respective interests.
- Dinner should be preferably nonspicy, less oily. If alcohol savvy, wine/vodka may be taken.

**Before retiring**
- Read a book, get engrossed in music or chant religious mantras and perform shavasan. Sleeping for a minimum 6–7 h is essential.

**Holidays/Vacations**
- Principally, take a careless attitude, breaking self-imposed disciplines by getting up late, sleeping adequately. A good oil massage for 30–45 min followed by a relaxing hot water bath. Enjoy foods of liking, forget about calories. Have fun with family and friends, plan outings, watch movies and enjoy the solitude of being with one’s self. Sleep early for a fresh next morning.

The bottom line

The brain systems operate on many levels of organization, each with its scales of time and space. Dynamics, the modelling of change, is applicable to every level, namely macroscopic, mesoscopic and microscopic levels. Humans learn by, in and through chaos, and the global dynamical structure of the
neural populations constitutes the self. The mesoscopic chaotic dynamics endows brain with the capacity to create new kinds of trials in the course of learning by trial and error, by which to generalize across inputs from equivalent sensory receptors. The inherent dynamical complexity and instability lead to multistable self-organizing behavior based on coupled chaotic oscillators of the neuronal network dynamics, giving brain the characteristic ability to respond flexibly to the outside world and to generate novel activity patterns, including those that are experienced as fresh ideas (also fresh behavior, emotions, belief systems, mythologies, etc.), resulting in meaning-laden perception, a gestalt that is unique to each individual. To tune into and resonate with the rhythms of the brain systems, a day-to-day schedule needs to be orchestrated to achieve the desired realms of health and happiness!

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