

Contemplative Neuroscience as Evidence-Base for Spirituality in Health

Anand Ramanujapuram

Research Scholar in Medical Science, Faculty of Science,
Shri JTT University, Jhunjhunu, Rajasthan 333001, India
Consultant Neuropsychiatrist, Bangalore, India

Abstract

Spirituality is considered as a positive entity and a high human achievement. Spirituality is often seen as esoteric and connected with religion. Lot of misrepresentation and misconceptions exist about spirituality. Historically science has by and large tried to keep a distance from spirituality as a field worthy of enquiry. Scientists in the past have struggled to define spirituality and have shied away from studying this dimension. However with recent scientific interests in ancient Eastern traditional practices of yoga, meditation and mindfulness there has been a shift in the scientific views on spirituality. The important role spirituality plays in human activities and life has become apparent. Spirituality is being considered as an important dimension of health along with physical, mental and social dimensions. This has been acknowledged by the World Health Organization (WHO). Advances in cognitive neuroscience and greater understanding of positive psychology has given rise to the new field of contemplative neuroscience. This review is an attempt to present the state of the art understanding of spirituality and its application to health through the new science of contemplative neuroscience.

Keywords: *spirituality, contemplative neuroscience, yoga, mindfulness, meditation*

1. Introduction

It was believed by many in the past that spirituality was a field outside the realm of science. Medicine for a long time never considered it as an important component of health. But a finer look into the past reveals that science in fact has tried to address spirituality from very early times in its evolution. As science has evolved from philosophy it is not unusual that this association has existed although not fully acknowledged. Early scientists have been philosophers foremost. Even Albert Einstein is

quoted as saying that he was a spiritual person. Scientists from several disciplines have tried to address spirituality from the point of view of their own discipline or subject expertise. The close association of consciousness to spirituality and also to the brain makes the topic of spirituality very relevant to neuroscience. Consciousness is also central to yoga philosophy and practice. As neuroscience and its application in human activities is closely associated with health and medical science, spirituality is also significant to medicine and therefore to health science. WHO has accepted the spiritual dimension as integral to the definition of Health along with the physical, mental and social dimensions.

2. Science and the Human Mind

Science is derived from the Latin *scientia* meaning knowledge. It is a systematic way of building and organizing knowledge. This is done through observations, and formulating testable explanations and predictions, about the object of study in the universe. Neuro is derived from the Greek *neuron* meaning nerve. Neuroscience is the scientific study of the nervous system including the brain. The brain cannot be seen separate from the mind. The mind was thought to be a function of the brain. Disturbances in the brain produce disturbances in the mind. The brain influences the mind. But recently cutting edge research using sophisticated technology has shown that the mind can influence the brain.

When we talk of knowledge, we consider it as a thing that can be acquired, possessed and used by the mind. The process or function or activity of the mind that uses knowledge is called thinking. The act of thoughtful observation is called contemplation. It is used synonymously with meditation often. It is seen as a practice in which an individual trains the

mind. It may be practiced as an end in itself or as a method leading to positive effects or changes in the individual with the potential of positively affecting others and the environment.

3. Contemplative Neuroscience

Contemplative neuroscience is the new and emerging field that studies systematically using sophisticated technology the effects of ancient contemplative practices of thousands of years especially prevalent in the East and more specifically originating from India. It uses several scientific methods and computer based instruments to observe and record activities in the brain and the nervous system in people engaging in specific contemplative practices of which traditional yoga is gaining attention.

These practices have been proven to produce positive and beneficial health effects on not only the mind but also the body. This provides evidence-based scientific basis for the traditional spiritual techniques of yoga that have been recommended by the ancient sages and yogis as essential for attaining higher states of consciousness, personal development and self-actualization.

4. Transformative Care Paradigm of Health

The modern concept of health care is transformative care which is holistic and person centred care which takes into consideration physical, mental, social and spiritual factors. The Stress-Vulnerability Diathesis Model of disease puts forth that an individual may be born with certain predispositions or genetic vulnerability to certain diseases but it is not necessary that the disease expresses itself. When there are increased risk factors and contributing factors and the stress burden on the person exceeds the capacity or resilience of the person then the disease manifests itself.



Figure 1: Stress Vulnerability Diathesis Model (Illustrated by author)

This is explained with the analogy of a bucket. The volume of the bucket is the individual capacity or sensitivity to bear the burden of stress. The water flowing from the tap are the various stresses. As long as the capacity exists there are no symptoms. Once the capacity to bear is exceeded, then physical and mental symptoms express themselves.

All Mind-Body Medicine practices focus on preventive care and transformative care focusing on enhancing the resilience of the person or increasing the capacity to bear stress so as to reduce the burden of stress on the whole person leading to maintenance of health and restoration of wellness.

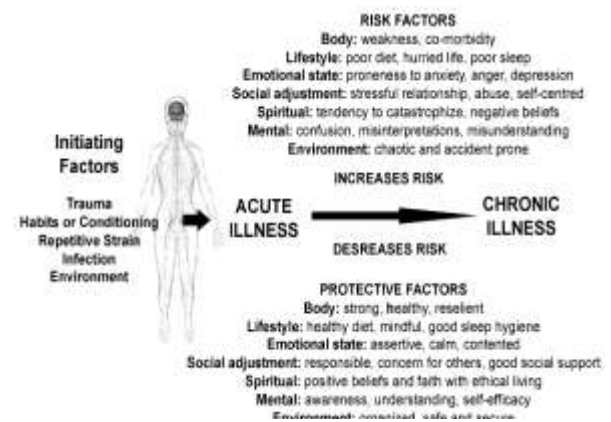


Figure 2: The Transformative Care Model of Health (Illustrated by author. Modified after Friction)

Contemplative practices such as yoga, mindfulness and meditation are mind-body practices which can enhance the protective factors and reduce the risk factors of disease process. This can thus be curative and also preventive leading to improved health, wellbeing and quality of life. Transformative care is indeed possible through contemplative practices like yoga, mindfulness and meditation. They can be seen to address aspects of body, lifestyle, emotional state, social adjustment, spirituality, mental disposition and the environment.

5. Neuroscience of Spirituality

There is now an increasing acceptance of spirituality in medical science. The neuroscientific correlates of spirituality is considered to be the same as positive emotions. Positive emotions are a set of selfless and altruistic traits which promote inclusion, warmth and nurture and brings people together. These emotions also facilitate health, wellbeing and enhanced quality of life. The commonly considered positive emotions are hope, joy, trust, gratitude, compassion, forgiveness, love and awe. These feelings allow one

to transcend and connect to something that is larger and of a positive and divine nature.

Studies in Mind-Body Medicine especially with meditation have demonstrated that people who practice the techniques regularly report better health, improved wellbeing, and a feeling of sacredness. Though most people had chosen religious symbols as an object of meditation there were several who had chosen neutral or non-religious sounds or images who also reported the feeling of sacredness. The underlying neural substrates for spirituality and positive emotions are in the limbic system and prefrontal cortical connections wherein an integration, cohesion and balance is observed. The commonly used meditation techniques to cultivate positivity are the self-awareness meditation, focused attention meditation, mindfulness meditation, and loving kindness meditation along with aspects of classical yoga.

6. Contemplative Neuroscience in Health

The qualities of presence, compassion and positive intention are highlighted as qualities that could be incorporated into daily practice of the clinicians that can embody spiritual understanding and enhance care for the patients. In order to augment everyday activities with these qualities would require that the clinician engage in certain disciplines. This brings into focus and relevance the recently emerging field of contemplative neuroscience.

Contemplative neuroscience as already discussed, studies the brain functions and structures that emerge as a function of contemplative practices like yoga and meditation. This science is largely hinged to the larger study of neuroplasticity which holds that the brain is a key organ of change in response to experience and training. What has emerged from this research is that practice is key and repeated practice brings about transformation that is pronounced and lasting. When opportunities are made available to clinicians to undergo training in contemplative practice then this may help them to be trained to acquire or enhance in themselves such qualities as sensitive attention, compassion and positive intention.

One aspect of mind-body medicine incorporating contemplative training programs for patients with various disease conditions have shown to have positive effects on the course of the illness and the subjective wellbeing of the patients. The other aspect is the cultivation through practice, by the clinician, and its indirect health and positive effects on the

course and response of illness in the patient and his/her wellbeing. It would be important for future research in this area to incorporate rigorous biological measures to determine the relation between patient-clinician interaction, care giver characteristics and outcomes in order for the wide biomedical community to appreciate and accept the spiritual dimension of medical care.

7. Spirituality in Medical Science

Spirituality is becoming an essential aspect of health and increasingly being recognized as part of the public healthcare systems especially in the modern organized medical systems of the Western world. Spirituality has been however a part and parcel of health and wellbeing in the ancient Indian conceptualizations of wellness and medicine which is apparent in the traditions of yoga and Ayurveda. The adaptation and scientific validation of some of the concepts of spirituality by Western science has allowed spirituality to be considered important in overall health and medical care.

Aspects of spirituality that have been studied as having an important bearing on health and quality of life has been in recognizing and acknowledging it in end of life care. It is seen as essential in the compassionate and humane care during this very sensitive time for patients and their families. Spirituality itself is multifactorial with much emphasis on the multicultural factors as it is related to unique experiences and beliefs arising in culturally unique and distinct situations. It is important to understand for physicians especially in primary care the symptoms of spirituality in order to better understand the person suffering from the disease and to offer holistic care.

In order to address this important dimension of healthcare by physicians is to develop and embody certain qualities that can facilitate and sensitize the physician or healthcare professional to the spiritual needs of the patient's health care. An important notion in this context is the aspect of being present. This notion of paying sensitive attention to the patient's needs is highlighted by the proximity of the physician to the patient and the intentionality. Embodying spirituality should also be seen as part of good medical care.

This concept of the spiritual dimension in medical care has important implications in training clinicians. The questions that require addressing in this context are how to measure the traits required by clinicians to address spirituality related issues in the patient, how to measure if such qualities are present, how

does the presence of such qualities in the clinician affect patients, how do these qualities impact the patient over and above general wellbeing and perceived care, and can these qualities be taught or trained as skills in the health care worker or clinician.

Over the recent years, there has been great advancement in the knowledge of mind and brain interactions and in turn the brain effects on peripheral biological systems. There are advances in their operations in not only disease but also in health and wellbeing. Mind-Body Medicine has emerged as an important part of medicine and health care systems. There are important correlations of mind-brain mechanisms in not only the patients won health but also mind-brain mechanisms in the clinician affecting mind-brain systems in the patient which have important implications on spirituality in medicine.

8. Contemplative Neuroscience of Spirituality in Health

The definition of spirituality as relevant to medical care and health can be considered as a search for something beyond human existence and a means of reaching there, developing a sense of connectedness to the world and with the unifying source or force of all life. It is an expression of a profound need in all to have meaning, love and happiness in their lives. Spirituality can help manage stress and improve quality of life. Spirituality can reduce the vulnerability to diseases and allow to bring hope and reduce suffering. These health aspects of spirituality have been studied and shown to be a valuable dimension of health.

Physicians very often encounter patients who in their narrative describe a complex of physical, emotional and existential difficulties. Much of it is related to stress and how it is managed. The leading cause of death and disability in the world today can be attributed to lifestyle diseases maintained and promoted by chronic stress. Existential crisis can sometimes lead to suicide. Many times physicians are unable to recognise the crucial role of spirituality in its ability to help patients develop better coping of stress, be able to develop a sense of unity, have purpose and satisfaction with life.

Improved wellbeing is possible by developing a spiritual attitude to life and considering a unity of being and purpose. Developing a calm and realistic awareness of satisfaction with one's life can be seen

as the necessary criteria for wellbeing. Adaptability and flexibility are important qualities to incorporate in one's life in a calm and serene attitude along with acceptance and without complaining or any regrets. Every human being is endowed with a natural tendency towards spirituality as an evolutionary requirement for wellbeing to face aspects of life, death, disease, disappointments, work satisfaction, rejections, frustrations and mysteries of life. For lasting happiness, health, meaningful life, satisfaction and resilience to adversities to be achieved, this is ultimately possible only with spirituality.

The limbic cortical communication in the brain system through connecting matrix of sub-cortical circuits like the Papez circuit or the limbic circuit connect the anterior cingulate cortex with the hypothalamus, thalamus and hippocampus. Self-acceptance progressing to a calm state of self-awareness requires the integration and engagement of the cortical with the subcortical circuitry in order to facilitate balance and homeostasis and hence wellness. Self-awareness is a key to health in a curative and preventive sense.

Growth in wellbeing is possible through practice of contemplative techniques. Self-awareness is a key trait gained through contemplative practices. Growing in awareness helps a person to transcend his or her distress, dissatisfaction and life problems, and rediscover a sense of unity.

9. Conclusion

Spirituality is a relevant and important aspect of life. Spirituality is an essential dimension of health. It is as important if not more as physical, mental and social health. Modern neuroscience has been able to provide a scientific understanding of spirituality through the new and emerging science of contemplative neuroscience. Spirituality is further considered as a positive and essential character trait that can be cultivated and enhanced through contemplative practices of yoga, mindfulness and meditation which have historic origins in the traditional culture of India.

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