Chapter 150

A Sound Mind in a Body: How True is it?
Can Doctors Play an Effective Role in this?

Ashutosh Ojha

INTRODUCTION: DEFINITELY YES

The intimate connection between mental health and physical health has long been recognized; mental health can affect illness and disease, just as illness might affect mental health. In the clinical context of psychosomatic medicine the link between mental health and the function of body systems has always been acknowledged.

The treatment of mental health conditions such as depression and anxiety disorders have been the subject of much empirical research, with the good news that psychological treatment is clinically effective for depression and anxiety, either as a discrete approach, or as an adjunct to standard or specialist medical care. In fact, psychological interventions not only reduce the symptoms of depression and anxiety, but also can have a direct impact on the physiological function of the body. The disordered thinking and feelings associated with depression, and the resulting anxiety, lead to disordered function of our body systems, in particular, the endocrine system. Since the origin of behavioral medicine, a mounting body of research confirms the clinical wisdom that mental health affects physical health. Recent psychophysiological research has unravelled some of the mechanisms by which mental health problems and general life distress may cause physical diseases such as coronary heart disease, cancer, diabetes and autoimmune disorders.1

The mind-body connection appears so significant that the use of psychological techniques can even reduce the risk of most major diseases.

This paper draws on recent research and behavioral medicine to illustrate how depression and anxiety influence physiological processes with particular reference to coronary heart disease.

DEPRESSION AND PHYSICAL HEALTH

Although depression is a common presenting disorder everywhere, but for availability of authentic data from Australian psychological practice (with 30-day-point prevalence among adults of 3.2% for males and 5.2% for females), few mental health practitioners will be aware of the relationship between depression and health problems.2 Depression is predicted to be the leading global cause of nonfatal disability by the year 2020. However, at present, the burden of depression in India is already second only to coronary artery disease.3

The relationship between depression and coronary heart disease serves as a useful example to demonstrate how thoughts and mood might influence physical health. While the presentation of depression and coronary heart disease differ, the underlying pathophysiological mechanisms may be very similar, as the risk of coronary heart disease increases fourfold in depressed people.4 This risk might be highest for middle-aged males, with research indicating that men with depression have a 71% higher heart-disease risk and are 2.34 times more likely to die of heart disease than nondepressed men.

Both conditions are marked by high rates of anxiety, hormonal, immune and inflammatory responses that play a part in creating the psychological symptoms, as well as damaging the arteries and organ systems of the body. Then, we should understand the mind-body connection in depression and treatment of both is effective in mediating the mind-body response to better outcome.

FEELING HAPPY AND BEING HEALTHY

Happiness is not just a matter of adequate psychological resource. It is a balance between how our body systems function with regards to our internal dialogue and beliefs, along with the external events in our life. For example, we might not cope effectively with life problems due to the activation of unhelpful internal dialogue that make us stressed and affect the function of our body systems. Likewise, unhelpful beliefs and internal dialogue can generate stress that create problems in life and affect our physical functions. Health problems can also generate stress and cause imbalance to the relationship between these three factors. Optimal psychological and physical health is achieved through a balance between these psychological and physiological factors. In this psycho-pathophysiological model, stress is the factor that tips the balance into chronic negative emotions that lead to metabolic changes and increase the risk of coronary heart disease. A diagnosis of major depression is not necessary to increase this risk; even ongoing anxiety, feelings of hopelessness and sadness can more than double the risk of coronary heart disease. Likewise, this risk is also increased through ongoing strong negative emotions such as anger, hostility and resentment.5

STRESS RESPONSE

Stress is normal in the everyday experience of life. In fact, optimal stress is necessary for motivation and performance of tasks and roles in employment, social life and interpersonal relationships. A life without stress means that we would lack the motivation and intention to act on our environment. Greater levels of stress are important when facing threatening demands in life and allow us to adapt quickly to changing or difficult situations. For example, adaptive stress might raise our sense of personal threat and assist us to make an instant decision, e.g. to walk quickly across the road when a car is approaching faster than we thought, or to avoid people who

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Chain of Causation between Cognition, Hormones and Health

What happens to us when we become stressed? As we now know, when we appraise a situation as of sufficient stress, hormones are released that initiate the fight or flight response. Interestingly, major depression or simply feelings of anger, hostility and frustration, all trigger the same release of stress hormones. So what stress hormones are released by the endocrine system and what physical changes occur in our bodies in response? Thoughts in the cortex can trigger the hypothalamus to release corticotropin-releasing hormone that stimulates the release of cortisol and norepinephrine.

The sympathetic nervous system then continually activates the secretion of these stress hormones. The peripheral nervous system that inhibits the function of the sympathetic nervous system is suppressed. There is good evidence that chronically elevated levels of cortisol and norepinephrine contribute to hypertension, insulin resistance and diabetes, well-established risk factors for coronary heart disease. Further, elevation of stress hormones and suppression of the peripheral nervous system appear to suppress serotonin production and might provide one explanation of how stress hormones are implicated in mood problems and depression. Metabolic syndrome consists of abdominal obesity, hypertension and low levels of high-density phospholipids, high triglycerides and high-blood glucose. Depressed people are at greater risk for metabolic syndrome than people who are not depressed.

Raikkonen, Matthews and Kuller (2002) found that emotional characteristics of anger, depression and anxiety in middle-aged female sample (n = 425, 7-year-longitudinal study), were more likely to develop metabolic syndrome. At the same time, women without these characteristics, but with metabolic syndrome, were more likely to develop anger, anxiety and depression.

To date, the majority of research has focused on the role of cortisol as a key stress hormone. Cortisol is an important hormone released at times of stress, but as discussed, chronically elevated cortisol has detrimental effects on health. Current research suggests that chronically elevated cortisol may not only be a factor in the development of coronary heart disease and metabolic syndrome, but also type II diabetes. They also kill neurons and are a risk factor for Alzheimer’s disease. A further detrimental effect of chronically elevated cortisol is that it can suppress the function of the immune system. As we age, there is a steady increase in cortisol levels and a reduction in hormones that reduce cortisol.

Impact of Stress on Immune Function

Until recently, it was thought that the nervous system did not communicate with the immune system. If stress did affect immune function it was assumed that the mechanism would be hormonal such as with elevated cortisol. Recent research has identified that stress does influence immune function, and it does so through secondary mechanisms where the nervous system influences the behavior of immune cells, lymph, bone marrow and spleen cells through direct synaptic communication. It increases proinflammatory cytokines (TNF-alfa and IL6). It increases C-reactive proteins. Neuropeptide-Y which regulates the total energy expenditure, lipid and carbohydrate burning rate causes thyroid hormone release and consequent metabolic changes including calcium metabolism. Stress is also known to cause hyperhomocysteinemia.

Psychological disorders: Many more causes, but which are less prevalent—addiction, chronic illness-associated depression, congenital disease-related depression, insomnia, jealousy, prosecutory behavior are noted to have higher incidence of chronic illnesses and even rapid deterioration (Table 1).
### General

**TABLE 1 | Biochemical similarities in coronary heart disease and stress**

<table>
<thead>
<tr>
<th>Biochemical properties</th>
<th>Coronary heart disease</th>
<th>Stress</th>
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<tbody>
<tr>
<td>Inflammatory cytokines</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Homocysteine level</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Serum cortisol</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Norepinephrine level</td>
<td>Increased</td>
<td>Increased</td>
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</tbody>
</table>

**TABLE 2 | Average of participant sample had less physical diseases when having enough social support and positive mental training**

- 87% less heart disease
- 55.4% less tumors
- 50.2% less hospitalization
- 30.6% less mental disorders
- 30.4% less infectious diseases

**Remedy for Negative Brain Responses**

Physician is the first doctor who sees the patient. He should have a good knowledge of mind-body relationship. He should evaluate the patient as a whole, and give advice not only for body-related morbidity, but also advice regarding the relation of physical illness with stress, depression, etc.

**Psychological Strengthening**

There is growing interest in psychological strengthening as a technique to enhance general health. Some of the best known techniques are: **meditation, guided imagery and concentration**. Many of these are age-old and have religious flavor. Studies testing these techniques have demonstrated better general health outcome compared with controlled population as shown in **Table 2**.

The evidence is sufficiently robust that insurance companies in US and Europe offer substantial discounts to people who practice approved meditation. Similar studies from Brahmakumari, Maharschi Yogananda, Baba Ramdev and Art of Living institutes have reported benefits.

The standard 16-week course done in many short spells has been shown to be effective in creating a change in how participants perceive and respond to stressful situations, increase self-monitoring of stress provoking thoughts and the use of relaxation techniques, and greater use of social support. Typically, participants experience a significant improvement in depressive symptoms and physiological markers of coronary heart disease across all measured health parameters.

**Psychological Intervention and Immune Function**

Primarily from the oncology literature, however, it is likely that these principles apply equally to immune changes that occur with depression and coronary heart disease. Fawzy et al. (1993) examined a stress management intervention with melanoma recurrence and survival postoperatively. The rate of recurrence was halved and the death rate lowered when surgical management was combined with 6 weeks of stress management directly after diagnosis. Comprehensive psychological training such as relaxation, individual or group Bible therapy have proven effective with people at high-risk of cancer and coronary heart disease (**Table 3**).

**Give Hope, Arouse Faith**

Research has demonstrated that psychotherapy can minimize the impact of personality type on health risk and improve overall health risk profile. External social factors have also been shown to be important for the reduction of health risk induced by stress. Interventions that enhance social support have been shown to reduce risks to deterioration of physical health and mental health and improvement in longevity. There is an independent relationship between the quality of interpersonal relationships and mental and physical health. On average, the severity of chronic mental illness is reduced by improved social relationships. Factors such as hope and faith are also very important. Religious belief is associated with better health, early recovery and lower rates of depression and substance abuse. In large longitudinal population studies in USA, regular church attendance has a positive relationship with greater longevity. Interestingly, this research suggested a dose-dependent-effect with greater frequency of church attendance predicting greatest longevity. Overall, these different research findings suggest that a high degree of social integration and quality relationships have a profound effect on both risk and recovery from mental and physical illness (National Action Plan for Promotion, Prevention and Early Intervention for Mental Health 2000).

Psychotherapists can be confident that assisting patients to manage depression and anxiety will not only improve their psychological symptoms, but also have an independent positive effect on their physical health risk. In particular, treating depression and anxiety decreases the risk of coronary heart disease, metabolic syndrome, autoimmune disorders and cancer through the reduction of stress hormones. Psychological treatment is effective for treating depression and anxiety through stress management, integrated lifestyle changes and psychotherapy. In order to provide an integrated response to the complex psychological and physiological presentation of depression and anxiety disorders, and improve health outcomes for patients, all doctors are encouraged to include techniques from behavioral medicine in general therapeutic practice.

**TABLE 3 | Personality and health**

<table>
<thead>
<tr>
<th>Type of personality</th>
<th>Characteristics</th>
<th>Disease risk</th>
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<tbody>
<tr>
<td>Type 1</td>
<td>Suppresses emotions, have difficulty dealing with interpersonal stress. Tends toward depression and helplessness</td>
<td>Cancer risk</td>
</tr>
<tr>
<td>Type 2</td>
<td>Demonstrates anxiety, aggression and ambition. Inappropriate expression of emotion and stress</td>
<td>CAD risk</td>
</tr>
<tr>
<td>Type 3</td>
<td>Mixture of 1 and 2</td>
<td>CAD and cancer</td>
</tr>
<tr>
<td>Type 4</td>
<td>More harmonious, have good communication and self-awareness</td>
<td>Lower risk of all serious illness</td>
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**Abbreviation:** CAD, Coronary artery disease
CONCLUSION

There is enough scientific proof that "A Sound Mind is must in a Body." Whenever the sick and infirm seek our advice, we should look for both physical and psychological factors. Whenever new and unusual symptoms arise in an otherwise stable patient, we should look for associated stress, behavioral or social changes. Thereby, we aim to treat the body and the mind, i.e. treating the patient as a whole. We must emphasize that "we only treat, while God heals him."

REFERENCES