Chronic stress is the single most contributing factor to the development of "dis-ease" and complementary therapies are the best possible way to successfully treat it.

Scientific literature definition of stress

Acute Stress and the Fight-or-Flight Response

Beginning with the ground-breaking research work done on stress during the middle of the 20th century by Hans Selye, a Hungarian-born endocrinologist, scientists now know that the human body has developed over the eons a set of built-in, neurological and biological mechanisms that are rapidly activated whenever we find ourselves confronted with an emergency situation or at least one we perceive to be a threat to our well-being. Selye referred to this reaction to a stressor as the General Adaptation Syndrome (GAS) which he then divided into three stages.

The first stage he called the alarm reaction which is more commonly known today as the fight-or-flight response. When activated by a stressor, a small area in the central portion of the brain known as the hypothalamus quickly sends an alarm signal to the sympathetic branch of the autonomic nervous system to activate the pituitary, the master gland of the brain, as well as the medulla portion of the adrenals; a pair of walnut-sized glands situated on top of each kidney. Collectively, this important network is referred to as the hypothalamic-pituitary-adrenal axis.

The hypothalamus alarm signal quickly activates the fight-or-flight response which is characterized by a cascade of biological changes rapidly taking place within the body as a flood of stress hormones including cortical, adrenaline and nor-adrenaline are released into the blood stream. This quickly produces a heightened state of mental and physical arousal that is marked by a sudden increase in heart rate, blood pressure, respiration and metabolism in order to quickly prepare the body to respond to the perceived emergency.

More blood is also immediately diverted to the large muscle groups of the body in order to prepare it to fight harder or to flee faster, pupils dilate to maximize vision, the liver dumps large amounts of glucose (blood sugar) into the blood stream to ramp up metabolism, reaction time is dramatically improved and profuse sweating may occur to keep the body cool during this state of heightened excitation. At the same time, those body functions that are not critical to immediate survival are deprived of normal blood supply. Consequently, the digestive and reproductive systems are suppressed, growth hormones are switched off and even the immune system is inhibited.

Researchers believe that our early human ancestors must have developed this fight-or-flight adaptive response in order to help them to survive life-or-death physical threats such as fighting off an attack from a wild animal. Once the threat has been successfully dealt with, the biological mechanisms that initiated the fight-or-flight response shut down, the body quickly returns to a normal metabolic rate and homeostatic balance is restored to all physiological systems.

Although we are fortunate enough to no longer have to deal with attacks from wild animals in the modern world we live in, the fight-or-flight response still serves an important function for the body in emergency situations or at times when enhanced physical performance is required.

For most of us, however, the stressors we find ourselves confronted with today are of a psychological nature rather than as physical threats. What researchers have discovered, however, is that our body is unable to make any distinction between different types of stressors.

Consequently, the fight-or-flight response can potentially be triggered any number of times during the course of a day; depending upon the number of stressors we find ourselves confronted with in our fast-paced, hectic lifestyles. Unfortunately, the more frequently the fight-or-flight response is triggered the more resistant it becomes to shutting back down again afterward and the body may eventually begin to experience the strain of a more chronic form of stress.

Chronic Stress and the Biology of "Dis-ease"

Selye discovered that the fight-or-flight response appears to have evolved to help the body cope with emergency situations that are of a short-term duration. Consequently, he found that when stress becomes more chronic in nature the body attempts to counter it by activating a second set of biological mechanisms which he termed the resistance reaction stage. Unlike the relatively short-lived mechanisms of the alarm reaction that are initiated by nerve impulses from the hypothalamus, the resistance reaction is initiated by a cascade of hypothalamic hormones in an attempt to counter the stress over the long-term.

It is important for the development of our appreciation of how "dis-ease" formation eventually occurs to point out that the hypothalamus stimulates the anterior portion of the pituitary gland to release hormones that activate both the thyroid gland as well as another portion of the adrenal glands referred to as the cortex. It will suffice to say that this perfusion of stress hormones into the bloodstream orchestrates a significant number of biochemical and physiological changes within the body in an attempt to continue to counter the potentially destructive influences of chronic stress.

Selye observed, however, that this second, resistance reaction stage puts a much heavier demand on the body, particularly the heart, blood vessels, thyroid, pancreas and adrenal glands. Consequently, over time, if the chronic stress is allowed to persist unabated without significant periods of time for the body to rest and recuperate, it eventually begins to show signs and symptoms of not being able to meet the demands being placed upon it. Furthermore, he found that, at the cellular level, alterations begin to occur in the electrolyte balance of sodium, potassium and hydrogen which can lead to premature cell death, damage to muscle and connective tissues and weakening of organs.

Depending upon the individual's age, genetic make-up and other factors a wide variety of both mental and physical signs and symptoms associated with chronic stress begin to appear during this resistance reaction stage. Among these are migraines and headaches, digestive problems, insomnia, depression, obsessive compulsive disorder, anxiety, diabetes, heart disease, vascular disease, infertility, eating disorders, obesity and skin conditions to name just a few. These are, in fact, the signs and symptoms that account for 70 - 90% of the office visits to doctors. Unfortunately, all conventional medicine has been able to offer patients are prescription drugs designed to help manage or suppress the symptoms; many of which have their own toxic, side-effects.

Obviously, if an individual fails to implement measures to significantly reduce the number and/or intensity of the stressors that are exerting such an overload on both the mind and body, he/she will ultimately enter the final phase of the General Adaptive Syndrome which Selye termed the exhaustion stage. This is characterized by a continuation of cellular destruction, more damage to muscle and connective tissue and further weakening of organs until the vital energies that have been sustaining life give way to more serious medical conditions or even death. This, then, is how chronic stress becomes transformed into the biology of "dis-ease."

Major Causes of Chronic Stress

As defined earlier, stressors are stimuli that trigger the body into activating the fight-or-flight response. They can be either internally or externally derived. In terms of external stressors, almost anyone who has grown up in our fast-paced, hectic culture would be quite capable of creating a long list of factors that would fit into this category. Some examples are the constant pressures of work or school, marital or relationship tensions, caring for children or aging parents, growing financial worries, etcetera.

External stressors, however, do not always have to be negative in nature. Many positive, life changes can also trigger the fight-or-flight response. Some examples of positive life events that can also fuel the fire under chronic stress are getting married, getting a promotion at work, having a child or retiring.

Although it may seem very difficult, most of the time we do have choice when it comes to dealing with external stressors that are contributing to our overall level of stress. We can choose to get out of a bad marriage or unhealthy relationship if it is constantly causing tension; we can choose to sell our home or significantly alter our lifestyle in order to reduce expenses and debt; and we can change jobs or even our career if we find that it is just becoming too stressful.

On the other hand, when the source of the chronic stress we are experiencing appears to be emanating from deep within ourselves, we usually have to resort to seeking professional help in order to achieve relief. And, based upon my clinical experience, I cannot emphasize enough that there exists within the mind and body of almost every man, woman and child who has grown up within our fast-paced, hectic, western culture a form of internally derived stress that is more insidious and detrimental to our health and well-being than any number of external stressors.

It is the destructive, emotional energy that accumulates within the nervous system as chronic stress due to our having been conditioned to avoid, deny or even repress our feelings and emotions, especially during the critically important childhood and adolescent, developmental years. A few of the more common examples are daily parental absence and/or an inability on the part of parents to properly nurture a child's emotional development, too early transfer of parental nurturing responsibilities to nannies or daycare services, emotional and/or physical abuse, too many high expectations being placed on a child by parents, family crisis such as a divorce or even a sudden change in living circumstances may all set the stage for eventual emotional withdrawal and the development of chronic stress.

The very latest research findings coming out of Harvard University point to the significant role constant parental attention and proper nurturing not only plays in an infant's actual brain development, but also on the ability of an older child to develop the emotional coping skills that will enable him/her to be able to comfortably express his/her feelings and emotions openly during the critically important early developmental years.

If, on the other hand, a child becomes negatively conditioned to frequently avoid, deny or even repress his/her feelings and emotions during this critical period of development, the appropriate coping skills may never be adequately realized. Often times these individuals will express as adults that they have had a childhood history of having been shy, always having felt lonely or remembering times when they experienced long periods of withdrawal. As adults, they may often exhibit characteristics such as low self esteem, a lack of self confidence, being overly self-critical, driven to perfection, having difficulty asserting themselves, lacking the ability to establish clear career and/or life goals and an inability to establish lasting, intimate relationships just to name a few.

Ultimately, the festering nervous energy associated with this form of internally-derived, chronic stress finds expression through various cognitive deficiencies (memory and learning) in childhood which may ultimately lead to mental illnesses, behavioural disorders, physical symptoms or various types of "dis-ease" states later on in adult life.

Warning Signs and Symptoms of Chronic Stress

The following table lists some of the more common warning signs and symptoms experienced during the early stages of chronic stress. You should regard these as red flags and seriously consider taking steps to identify the internal or external stressors that are placing demands on both your mind and body and then seeking therapeutic interventions that can help you to successfully reduce or eliminate them.

Cognitive Symptoms

- Memory recall problems
- Concentration problems
- Difficulty thinking clearly (brain "fog")
- Loss of objective thinking
- Forgetfulness
- Viewing everything negatively
- Racing thoughts
- Constant worrying
- Fearful anticipation
- Poor judgement
- Over-analyzing

Emotional Symptoms

- Moodiness
- Anxiety and restlessness
- Impatience
- Easily startled
- Short-tempered
- Irritable
- Unable to mentally relax
- Feeling tense and "on edge"
- Feeling overwhelmed
- Sense of loneliness / isolation
- Depression

Physical Symptoms

- Headaches and Migraines
- Muscle pain and stiffness (back, neck, etc.)
- Chest pain, palpitations, rapid heart beat
- Prolonged periods of fatigue
- Nausea, dizziness, tinnitus (ringing in ears)
- Skin conditions (eczema, psoriasis, warts)
- Constipation and/or diarrhoea
- Digestive problems
- Significant weight gain or loss
- Insomnia or sleep difficulties
- Frequent colds (weakened immunity)
- Gastro-intestinal conditions (IBS, colitis, etc.)
- Respiratory conditions (asthma, bronchitis, etc.)

Behavioural Symptoms

- Social isolation
- Sleeping too much / too little
- Self-medicating (alcohol or drug abuse)
- Teeth grinding (especially during sleep)
- Over-reacting to problems
- Loss of sexual interest
- Procrastination / neglecting responsibilities
- Emotional eating and craving sweets
- Over-exercising / compulsive shopping, etc.
- Increase in relationship conflicts
- Loss of interest in hobbies / life pursuits

Adrenal Gland Fatigue and "Burn-out"

As described earlier, the hypothalamus, located deep within the central portion of the brain, initiates the alarm signal that activates both the fight-or-flight response to an acute stressor as well as the second, resistance stage when the stress has become more chronic. Unfortunately, both of these adaptive responses end up putting a high demand on the adrenal glands to continue to secrete cortisol, adrenaline and other stress hormones. Consequently, over time, the adrenals eventually become over-worked and reach a state of fatigue which is characterized by either a drop off or an elevation in the normal levels of cortisol; depending upon the time of day. When this occurs, the hallmark symptom an individual begins to experience has been aptly described as "burn-out."

<u>Symptoms of Adrenal Fatigue</u>

The following symptoms are your body's way of telling you that it is not receiving the support it needs to maintain healthy adrenal function and significant steps need to be taken to reduce the destructive effects of chronic stress:

- Fatigue
- Feeling very sluggish on awakening despite a sufficient amount of sleep
- Insomnia
- Unexplainable weight gain
- Depression
- Acne
- Hair loss
- Reliance on stimulants such as caffeine and nicotine to stay alert

- Cravings for refined carbohydrates like sugar and soda
- Cravings for salt
- Poor immune function with frequent colds, etc.
- Intolerance to a cold environment

Related Conditions

If significant steps are not taken to reduce chronic stress, the progressive inability of the adrenal glands to secrete optimal levels of important hormones can lead to deficiencies of the other glands within the body and the development of medical conditions such as the following:

- Hypothyroidism (due to deficiency of the thyroid gland)
- Pre-diabetic syndrome (due to deficiency of the pancreas)
- Hypotension
- Chronic fatigue syndrome
- Fibromyalgia
- Arthritis
- Premature menopause

As noted above, individuals experiencing a level of fatigue common with even the early stages of adrenal exhaustion begin to resort to consuming more stimulants such as caffeinated coffee and sodas or cigarettes in an effort to try to counter the progressive drop in energy they are experiencing. Unfortunately, they do not realize that these stimulants actually force the adrenal glands into trying to secrete even more cortisol and adrenaline which only serves to deplete them even further.

Adrenal fatigue can also cause these glands to eventually lose the capacity to secrete sufficient levels of DHEA (dehydroepiandrosterone). This important molecule serves as a precursor to the production of important sex hormones - estrogen, progesterone and testosterone - and is necessary in order to keep them in balance within the body. Consequently, an insufficient level of DHEA not only contributes to a decrease in sex drive in both genders, it can also lead to menstrual problems in females and infertility in both genders.

Adrenal fatigue can often be detected long before it is able to progress to one of the more serious medical conditions by administering a simple acupuncture examination involving palpation (finger pressing) on the hara (abdomen) followed by a postural blood pressure test, pupil dilation test and a simple abdominal skin response test; all of which only take a few minutes to perform. If positive findings are detected, they can then be confirmed with a simple saliva test administered by the patient over the course of a day at home or at work and sent to a diagnostic testing laboratory to measure for abnormal fluctuations in the level of cortisol.

Many conventional, Western medical doctors have not yet been trained in preventive, diagnostic procedures. Consequently, they end up prescribing medications for their patients that are specifically designed to only treat some of the symptoms that adrenal fatigue causes until one of the above mentioned, medical conditions finally emerges. When adrenal fatigue is detected by conventional medical diagnostic procedures, it can be referred to as either non-Addison's hypoadrenia, sub-clinical hypoadrenia, neurasthenia, adrenal neurasthenia or adrenal apathy.

Treatment typically involves prescription medications and supplements to assist the adrenal glands to recover if they have not reached a state of permanent dysfunction and, since unresolved emotional issues are often found to be a major causative factor, counseling and additional psycho-active medications are also frequently recommended.

Severe Stress, Trauma and PTSD (Post-Traumatic Stress Disorder)

Severe stress reactions can result from sudden, catastrophic events or traumatic experiences such as a natural disaster, sexual assault, a life-threatening accident, or participating in combat. However, may also be caused by a childhood history of not having received timely and consistent nurturing of one's feelings and emotions on a daily basis so that the child ends up consistently trying to cope by avoiding or denying the existence of what they are truly feeling. This can ultimately cause a child to become emotionally withdrawn and eventually numb to their real feelings. Often times these adults state that they have very little memory of their childhood years.

In order to protect us from emotional overload, nature appears to have provided our minds and bodies with a mechanism that essentially puts the nervous system into a state of shock or numbness during significant or frequent traumatic events. That is why it can often be difficult for the sufferer to recall the details of what actually occurred later in life. Some individuals end up having no conscious memory of the event whatsoever with the underlying emotional content becoming totally repressed.

After the initial shock, many trauma victims gradually begin to recover the memory of the event(s) and with professional help can sometimes resolve the emotional content associated with them. For others, however, the traumatic event may remain repressed for many years as another form of chronic stress. In these cases, the body does not regain equilibrium and life never seems to return to normal.

This severe and persistent reaction to trauma is known as post-traumatic stress disorder (PTSD). Some of the more common symptoms of PTSD include flashback memories, intrusive thoughts, nightmares about the trauma, insomnia, avoidance of places and things associated with the trauma, hyper-vigilance for signs of unknown danger, over-reaction to sudden noises, chronic irritability, constant muscle tension, anxiety and depression.

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