On the increase, anxiety seems to be cropping up everywhere today. A seemingly permanent fixture in many people's lives, anxiety not only affects the mind but the body as well. Although it is important to discern the difference between a DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) diagnosis and anxiety in the form of a generalized state that so many people find themselves in today, the matter may only be one that is measurable by degree of intensity. Anxiety can be defined in two separate ways; the first as an apprehensive state of mind, typically that which is due to an anticipated event or general life stressors, and the second, more clinical definition, that defines anxiety as an abnormal, overwhelming feeling of apprehension and fear that is often punctuated by physiologic reactions including tension, sweating, and rapid heart rate. Included in this picture of anxiety is often an extreme form of self-doubt over one's ability to cope with particular stressors. Regardless of the definition, anxiety can affect individuals' minds and bodies in varying degrees. Of course, feelings of anxiety (as well as sadness, depression, fear, loneliness, etc.) are completely normal, (contrary to what the manufacturers of antidepressants will have us believe) especially given the tumultuous environment that we find ourselves in today. What is not normal is when these feelings pervade our entire being and are no longer remedied by simple resolution of stress. A comment also must be made that perhaps the rise of anxiety may be due in part to the over-medicalization of this symptom; television and print advertising regularly recommend medication for those with any degree of trepidation over daily lifetime occurrences as if feelings of anxiety are improper and should be medicated. It must also be said that the authors do not in any way intend to negate those with true symptoms of anxiety nor disregard the incredible burden that anxiety can impose on one's life. We have all, at one point in time, experienced a glimpse of the horror that those with generalized anxiety live with when faced with the stressors of work, home, school, finances, deadlines and other events in our lives.

Anxiety in the population today is continually on the rise. We continue to work longer and harder to get ahead (or stay afloat) all the while balancing relationships, family and home responsibilities. It is no wonder that more and more people experience stress and anxiety today than ever before. What may be arguable is whether more people are experiencing pathologic anxiety itself. Regardless, feelings of anxiety are more prevalent, and more and more people are seeking treatment for relief of their suffering.

DSM-IV diagnosed anxiety disorders are the most common psychiatric illnesses affecting both adults and children today. Anxiety disorders may spring from a set of complex risk factors including genetic predisposition, alterations in neurochemicals, personality traits, and life events. Anxiety disorders can be grouped into the following general categories.

- **Generalized Anxiety Disorder:** Characterized by excessive, unrealistic worries that last beyond 6 months. This form of anxiety can be accompanied by physical symptoms associated with stress such as insomnia, gastrointestinal upset, and headaches.

- **Obsessive-Compulsive Disorder:** People suffering from this form of anxiety often experience persistent, recurring thoughts that are caused by exaggerated fears or anxiety. These obsessive thoughts may cause the person having them to perform ritualized routines in an attempt to solve their anxieties.

- **Post-Traumatic Stress Disorder (PTSD):** This type of stress becomes manifested following an extremely traumatic event. People with PTSD generally experience flashbacks, avoidance behaviors and emotional numbing and physiologic symptoms such as insomnia and poor concentration.

- **Panic Disorder:** People with panic disorder suffer from debilitating attacks of panic that are often accompanied by symptoms such as heart palpitations, chest tightness, difficulty breathing and overwhelming fear.

- **Social Anxiety Disorder:** Characterized by an extreme fear of being judged by others or becoming embarrassed typically leads people with this type of anxiety to avoid situations involving other people.

- **Specific Phobias:** People with phobias will react intensely with an intense level of fear to a specific situation or object that can lead to avoidance of the most common everyday situations.

Approximately 19 million adults in the US alone are estimated to suffer from anxiety disorders. The economic and individual burden from anxiety is incredibly high as these conditions are often chronic and debilitating. People with anxiety disorders tend to utilize primary health care providers more often than psychiatric medical personnel. Other costs are incurred by emergency care, hospital, medication and psychiatric care sectors of the health care system; total costs also include decreased work productivity and absenteeism.

The costs associated with dealing with anxiety approaches $42 billion a year, $23 billion is associated with repeated medical visits for relief of anxiety symptoms that appear as physical illnesses; people with anxiety are 3 to 5 times as likely to seek medical care and are 6 times more likely to be hospitalized for these disorders than those without anxiety. Approximately 30% of individuals afflicted with anxiety disorders seek treatment for their anxiety condition while 30
million of us will experience some type of anxiety disorder at some point in life. Assigning a specific number to prevalence figures is difficult due to the fact that small changes in diagnostic criteria, interview and study methods can greatly affect results.

The etiology of anxiety disorders is multifactorial. The likelihood that a person will develop anxiety is related to a combination of life experience, genetic predisposition and personality/psychological traits. Individual effects of these influences differ from person to person and between different forms of anxiety. Some influences weigh differently as well, as in the case of a familial pattern in panic disorder wherein no gene has yet been located that directly links the two. It is however, generally accepted that a majority of anxiety originates in stressful lifestyles and events and most anxiety disorders have a state of increased arousal and fear as the common denominator. Additionally, it is important to realize that in many classic states of anxiety there appears to be no immediate external stressor. Science continues to attempt to discern a complete understanding of neurobiology and anxiety.

**Diet and Anxiety**

In itself, poor diet can be a major contributor to anxiety states and may therefore serve to inhibit the onset of some anxiety symptoms. An important contributor of anxiety is hypoglycemia as a result of infrequent eating or unbalanced dietary choices. Hypoglycemia symptoms (fatigue, hunger, drowsiness, poor concentration, irritability) have been traced to the effects of glucose deprivation in the neurons themselves; physiologic symptoms (anxiety, sweating, hunger, tremors, and palpitations) are thought to be the result of the autonomic nervous system's perception of lowered blood glucose levels.

People who do not consume a good balance of macronutrients necessary to sustain blood sugar levels are at risk for this phenomenon. Many people can identify with the aforementioned symptoms that typically occur in the late afternoon after no or very little lunch that contains inadequate caloric value. Infrequent and/or poor food choices, mainly those with a high glycemic index, are the most frequent causes of lowered blood sugar levels.

An interesting study utilized dietary therapy on patients who demonstrated anxiety in the form of obsessive behavior as a result of hypoglycemia (confirmed by glucose tolerance test); the dietary therapy was designed to avoid hypoglycemic states in the patients. Of the two study subjects, one experienced complete recovery while adhering to the study's dietary plan while the other subject made improvements that were concordant with his level of compliance to the dietary plan. Despite its small nature, this study displays that low blood sugar can indeed affect anxiety states and by maintaining adequate levels of blood sugar (roughly 90-110 milligrams per deciliter) we may offset some symptoms of anxiety. Another study investigated the link between diet and anxiety by examining the relationship between diet (vegetarian versus omnivorous) and reported levels of anxiety and depression in a group of 80 subjects. Significant differences in levels of anxiety and depression existed between the two dietary groups, with more symptoms experienced by the omnivorous group. Reasons for this result is undetermined; however the investigators stipulate that increased regulation of blood sugar levels may be one reason for the large difference in symptoms experienced between the two groups.

Included as other dietary factors having an influence on anxiety states, are alcohol and caffeine. Despite the fact that alcohol exerts a calming effect on the brain via its depressant effects (alcohol engages gamma-aminobutyric acid receptor (GABA) (A) receptors; potentiation of the response of these inhibitory neurotransmitter receptors results in anxious, sedative, and anesthetic activities in the human brain), alcohol is thought to be responsible for increased feelings of anxiety. In one experiment, subjects were given ethanol or a placebo and then evaluated for symptoms of anxiety using an objective testing device (Spielberger State Anxiety Inventory). Those subjects receiving ethanol experienced significant increases in anxiety symptoms in comparison to those given placebo. (The placebo group actually reported decreased feelings of tension). This may be due to the sedative effects of alcohol resulting in a lowered inhibition, but this is difficult to analyze. In short however, alcohol is only recommended in small, infrequent amounts, and more importantly, should probably be avoided altogether by those experiencing frequent anxious symptoms.

On the other hand, caffeine is a well-known stimulant that results in excitatory neurotransmission. The effects of caffeine in patients with agoraphobia and panic disorder were studied and were found to produce significant increases in anxiety, nervousness, fear, nausea, heart palpitations, restlessness, and tremors compared to the group of patients who received placebo. In addition, 71% of the study subjects consuming caffeine reported that the effects of caffeine were very similar to the symptoms experienced during a panic attack. A separate investigation showed that patients with anxiety experienced a degree of anxiety that directly correlated with their consumption of caffeine. In addition, this study suggested that those who are most at risk of anxiety have an increased sensitivity to the effects of even one cup of coffee. This finding was reinforced by the observation made that patients with panic disorder are more likely to discontinue coffee because of its negative side effects in comparison to those without panic disorder. Large doses of caffeine can mimic the symptoms experienced during anxiety while increased caffeine sensitivity

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Approaches to Anxiety

may contribute to symptoms. Some anxiety cases were much improved over the course of a 6-month followup period after caffeine was discontinued.10 Because of these findings, it is important that patients with anxiety disorders avoid caffeine-containing foods and beverages.

Specific treatments for anxiety disorders include psychological therapies (psychotherapy), pharmaceutical medication, and a combination of both. Typical medications that are used in anxiety include selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, benzodiazepines, beta-blockers, and monoamine oxidase inhibitors (MAOIs). These medications can be helpful to some patients, however a large majority of people on these medications report negative side effects and discomfort with these therapies.

Several non-pharmacologic treatments exist for anxiety, with backing in appropriate research trials. Anxiety treatment without pharmaceutical intervention strives to prevent the initiation of anxiety, using nutritional and or botanical medicines that work to alter the patient's susceptibility to anxiety. Counseling and other forms of psychotherapy are quite helpful in assisting the anxious person in working through and addressing unhealthy patterns. The complexity of anxiety warrants that several therapies be used, however a change in treatments, whether pharmaceutical or naturally derived, demands strict attention to side effects and interactions that may occur when using such treatments.

Vitamin and Mineral Deficiencies

As the basis for healthy functioning, complete nutrition is mandatory. True, it is often observed that life continues despite less than optimal nutritional habits; however just getting by is in itself a less than optimal situation, especially when confronted by symptoms, regardless of origin. Several vitamin and mineral nutrients and their lack in certain people may contribute to the occurrence of anxiety.

Pyridoxine

Pyridoxine, also known as vitamin B-6, serves as an important coenzyme in the synthesis of neurotransmitters. Specifically, gamma-aminobutyric acid (GABA), dopamine and serotonin neurotransmitters are synthesized using pyridoxine as an enzymatic substrate, and all are affected in anxiety, depression, and even perception of pain. Pyridoxine deficiency can lead to an increased sympathetic nervous discharge (increased excitatory nerve impulses) as well as hypertension in laboratory animals.11 Investigators hypothesize that this is a reflection of decreased production of dopamine, serotonin, and GABA. Interestingly, adding pyridoxine to deprived animals will lead to a decrease in blood pressure. A separate study that investigated the use of magnesium and pyridoxine on anxiety-related premenstrual (PMS) symptoms found that women who supplemented with as little as 200 milligrams of magnesium and 50 milligrams pyridoxine each day experienced much less anxiety-related PMS symptoms including nervous tension, irritability, and generalized anxiety.12 Although magnesium could be considered a confounding variable in relation to the complete anxiolytic effects of pyridoxine, the information contained in this study is relevant in reference to the effects of vitamin B-6 on resolving anxiety and related symptoms.

Niacin

Nicotinamide, a form of the B vitamin niacin, is known to exert similar effects on the brain as benzodiazepines.13 Nicotinamide stimulates the GABA-benzodiazepine receptor complex, an inhibitory neuron grouping. By activating these neurons, a calming effect is the end result.14 Other investigations designed to test the efficacy of nicotinamide and brain function revealed that GABA nerve receptors were under less control (meaning that because they are inhibitory in nature, when they are not activated the brain is more excitable – which in theory may lead to more anxiety) when nicotinamide was found at suboptimal levels in the subject, and reintroduction of nicotinamide led to a calming effect on the GABA receptors.15 These are important findings in nutritional medicine and warrant further research. More importantly, this evidence points to the necessity of this B-vitamin in modulating feelings of anxiety.

Magnesium

Magnesium supplementation enjoys a broad reputation as having a calmatative effect on anxiety symptoms and stress levels. Research is just beginning to highlight magnesium's effect on anxiety, with interesting results. One researcher observed decreased levels of nervousness as well as insomnia symptoms in patients supplemented with 200 milligrams of magnesium in combination with 400 milligrams calcium and an association between magnesium deficiency and anxiety symptoms was noted.16 A different investigation looked at the use of magnesium in post-surgical patients and its effectiveness in alleviating pain. Patients were infused with magnesium both during and following surgery and were evaluated for anxiety levels. Patients receiving the magnesium infusion required significantly less pain medication (morphine and fentanyl) in comparison to the control group that received no magnesium.17 Additionally, the magnesium group reported less anxiety as well. Magnesium deficiency is reportedly common in the typical American diet, with one major survey determining that adequate magnesium is lacking in nearly 72% of diets, and that nearly half of the population consumes less than 75% of the Recommended Daily Allowance (RDA) of magnesium. Furthermore, one third of these people consumed less than 50% of the RDA for magnesium.18 Those taking oral

Nutritional Support for the Musculoskeletal System

Supplementing the diet with whole food supplements and botanicals can provide your patients with support for helping bones and joints stay healthy and function properly. The following Standard Process® and MediHerb® products offer vital nutrients along with their synergistic cofactors to provide essential support to the musculoskeletal system: Ligaplex® I, Ligaplex® II, Glucosamine Synergy™, Biost®, Boswellia Complex, Saligesic, and Horsechestnut Complex. For more information or to order these and other quality supplements that support the musculoskeletal system, visit our website at www.standardprocess.com or call our Customer Service Department at 800-558-8740.
contraceptives, diuretic medicines and who overuse laxatives may be at risk of magnesium deficiency. Supplementing with magnesium is a simple and inexpensive means to further reduce anxiety.

Botanical Medicines
Lavender (lavandula officinalis) has mild relaxant effects, and is used traditionally for restlessness, insomnia, depression and nervousness. Lavender preparations are commonly derived from the plant oil; internal ingestion is contraindicated due to concentration of active constituents in the oil. Inhalation of lavender oil scents may serve to modulate feelings of anxiety in patients with mania, heading off a full-blown episode of anxiety.

Lemon balm (Melissa officinalis) is another botanical medicine with mild calming effects and the ability to reduce alertness, which is useful in the treatment of nervous anxiety, as well as other non-related medical problems. Brain function is directly affected (terpenes are thought to act on some of the inhibitory neurons (GABA) in the brain), thereby eliciting their calmative effects. A study utilizing both valerian and lemon balm demonstrated an improvement in the amount and quality of sleep in subjects taking this herbal combination.

Additional nutrients (Tryptophan, 5-HTP, Melatonin and Serotonin) are applicable in the treatment of anxiety; the reader is referred to the authors’ article addressing insomnia in the April 2004 issue of The Townsend Letter.

Conclusion
These studies highlight the utility of nutrition as an essential factor in both the prevention and treatment of anxiety symptoms. With multiple causes, anxiety is a condition that more than likely has multiple treatments in individual individuals.Treating the person with anxiety with adequate nutritional sources may alter anxiety levels and offer the patient a greater quality of life. The human experience includes anxiety in varying levels. However, when anxiety becomes a permanent fixture in one’s life, preemptive approaches are necessary. Discovering one’s own way of relaxing and engaging in stress reducing exercise and mental exercises (meditation, for one) can all play a very important role in maintaining an inner peace that seems so illusive at times.

References