

Sweet Slumber

By Terri Saunders

How wonderful at the end of a long active day to let go of all earthly concerns of time and space and ease into the blissful state of slumber. Deep restful sleep is an essential human need and as important to health as food, water, fresh air and exercise. Sleep is a natural rest period required for survival by most mammals, birds, fish and invertebrates. While voluntary body movement ceases during sleep, it is a dynamic time of healing, growth and rejuvenation.

Throughout history, sleep has remained one of life's greatest mysteries. The ancient Egyptians and Greeks erected sleep temples where people could go to incubate dreams, which were viewed as messages from the gods. They knew that sleep was essential for healing and believed that dreams revealed cures for physical and emotional maladies.

Sleep is regulated by natural circadian rhythms within all living things determined by 24 hour cycles of day and night. Brain wave activity, hormone production, cell regeneration and other biological activities are linked to this daily cycle. The biological "clock" that attunes us to this natural rhythm is located in the hypothalamus region of the brain known as the suprachiasmatic nucleus (SCN). As light enters the eyes, the photoreceptors in the retina create signals that travel along the optic nerve to the SCN. The SCN takes the information on day length from the retina, interprets it, and passes it on to the pineal gland which then secretes the hormone melatonin in response. Secretion of melatonin peaks at night inducing sleep and is at its lowest point at daybreak stimulating us to wake up.

Though sleep may appear to be a relatively passive state, it is in fact a very active time. Our bodies move during the night in response to brain activity which is even more varied than during the normal waking state. Research has revealed that there are 5 distinct stages of sleep. Brain wave activity, muscle tone and eye movement are markers of change as we move through the different stages.

The waking state occurs just prior to the first stage of sleep and is a relaxed period of wakefulness when tense muscles relax and eye movements slow to a roll. As we relax, the beta waves normally produced by an awake mentally active mind are replaced by slower meditative alpha waves.

Stage 1 is the transition state between sleep and wakefulness typically referred to as twilight sleep, considered by mystics to be a magical link between the conscious and subconscious minds. This hypnotic state allows for deep learning to occur and is when subliminal programming is most effective. Muscle activity is reduced by 50%. The eyes are closed and begin to roll slightly. Brain waves consist of some alpha and mostly theta waves, the state where intuition flows. If aroused during this state, we may feel as if we have not slept. This stage may last for 5 to 10 minutes.

Stage 2 is a stage of light sleep characterized by alternating periods of muscle tone and muscle relaxation. The heart rate slows, body temperature decreases and the body prepares to enter deep sleep. Brain waves actively peak and descend in the theta range. This stage lasts a few minutes.

Stages 3 and 4 are deep sleep stages characterized by very slow delta waves and some theta waves. The slower delta waves become more predominant in stage 4 which is the deepest stage of sleep before the more active Stage 5 REM

sleep. It is hard to wake someone up in delta sleep and they may be disoriented. Sleep talking, sleepwalking and bedwetting can occur during this stage of sleep.

Stages 1 through 4 are known as non-REM sleep and last a total of 90 to 120 minutes, with each stage lasting from 5 to 15 minutes. Stages 2 and 3 repeat backwards before REM sleep is attained, so that a normal sleep cycle might be waking, stages 1, 2, 3, 4, 3, 2, REM. Approximately 5 sleep cycles are completed each night for a total of about 8 hours.

Stage 5, known as REM sleep, occurs approximately 90 minutes after sleep onset. REM stands for rapid eye movement. In this state the brain is very active producing mentally active beta waves. Muscles may twitch, the heart may beat faster and breathing may become shallow and rapid. Though dreams may occur in any stage of sleep, it is in this state that dreams are most intense due to the heightened cerebral activity. If awakened in this stage we can vividly recall our dreams. Paralysis of major voluntary muscles protects us from acting out any violent dreams. The first period of REM typically lasts 10 minutes, with subsequent REM periods lengthening up to one hour. Deficiency in REM sleep can have a dramatic detrimental effect on our health, perhaps due to the importance of dreams to our well-being.

A healthy night of sleep is one in which all five stages occur in a patterned sequence of cycles lasting approximately 8 hours for an adult. Infants can sleep up to 17 hours a day, a 10 year old may sleep up to 10 hours, and adolescents do best on 9 hours of sleep. Due to hormonal changes and aging, the elderly may only sleep 6 hours. Slow wave deep sleep is longest early in a night's sleep and is the time when healing and rejuvenation occur. To optimize this restorative period it is best for adults to be in bed by 10 pm before the adrenals secrete the stress hormone cortisol which stimulates the body to stay awake.

As natural light recedes, our biological clock responds by signaling the pituitary gland to orchestrate a cascade of hormonal interactions that regulate body systems, repair damaged cells and build new ones. Beneficial bacteria in the colon trigger the secretion of immune promoting chemicals called interleukins which mobilize white blood cells to clear infection. The increase in interleukins signals the pineal gland to release melatonin which induces sleep. Sex hormones estrogen, progesterone and testosterone balance during sleep in synchrony with insulin and growth hormones. All of the systems, organs and cells of the body depend on our alignment with the 24 hour circadian rhythm to function effectively. Jet lag and Seasonal Affective Disorder, characterized by depression caused by decreased sunlight during the winter months, are conditions caused by disrupted circadian rhythms. In both cases, exposure to bright early morning sunlight or full spectrum light can help to reset biological clocks and balance circadian rhythms.

According to the National Sleep Foundation, before the invention of the light bulb people slept an average of 10 hours a night. Today, Americans sleep an average of 6.9 hours on weeknights and 7.5 hours on weekends. Approximately 70 million U.S. citizens are affected by a sleep disorder. According to a 2001 poll, nearly 7 out of 10 Americans experience frequent sleep problems and more than

half of adults surveyed in 2002 experience insomnia at least a few nights a week, characterized by difficulty falling or staying asleep, or waking too early. In 2004, more than two thirds of all children experienced one or more sleep problems.

Inadequate or disruptive sleep can have a profound effect on health. Sleep apnea, a potentially serious disorder that causes brief interruptions of breathing during sleep, affects as many as 18 million people. Approximately 12 million Americans have restless legs syndrome, a sleep movement disorder where unpleasant feelings in the legs such as tingling or pulling cause an urge to move. Narcolepsy, a neurological disorder that causes sudden sleep to occur at any time, affects approximately 300,000 Americans.

Sleep deprivation causes fatigue, mood swings, forgetfulness, difficulty focusing, disorientation, and in severe cases, delusions and falling asleep at inopportune times. It's estimated that 100,000 automobile accidents are caused by drowsy drivers each year. In a 2002 poll, 51% of Americans said they drove while feeling drowsy in the past year, and 17% said that they actually fell asleep at the wheel.

Night shift workers who are deprived of the powerful sleep-regulating cues of natural sunlight often become drowsy during work and suffer from insomnia when they try to sleep. They also have an increased risk of heart problems, digestive disorders and mental and emotional problems. The number and severity of workplace accidents increases during the night shift. The Exxon Valdez oil spill and the Three Mile Island and Chernobyl nuclear power plant accidents were attributed partly to errors made by fatigued night shift workers. The 1990 Gulf War friendly fire tragedy was caused by U.S. soldiers' lack of sleep. Soldiers in combat zones typically get an average of 3 to 5 hours of sleep per night.

Inadequate or poor quality sleep is emotionally and physically stressful to the entire body. In his book, "Sleep Naturally," Stephen Holt, M.D. notes that insulin resistance, commonly referred to as Syndrome X, is partly caused by hormonal balance due to sleep deprivation. Syndrome X has been linked to diabetes, obesity, heart disease, high blood pressure, high cholesterol, immune deficiency and cancer. Poor memory and concentration, reduced learning ability, fatigue, anxiety, depression, poor motor coordination and mood swings can all result from lack of sleep.

Many people are so desperate for sleep that they turn to drugs to induce needed rest. Approximately 25 million Americans use over the counter sleep drugs such as antihistamines which can cause hangovers, blurred vision and dehydration. 10 million Americans take hypnotic prescription sleeping drugs such as Ambien and Triazolam which can cause dependency and withdrawal even after only a few weeks. Both classes of drugs can alter healthy sleep cycles preventing restorative sleep, and cause a rebound effect making sleep even harder to attain after they are discontinued. Melatonin supplementation is not advised long-term due to its affect on other hormones, and should be avoided in pregnancy and in cases of autoimmune disorders.

Insomnia and sleep disorders are most often caused by stress and worry, however hormonal changes associated with PMS, pregnancy and menopause can also interfere with sleep. Eating shortly before bedtime can create digestive upset disturbing sleep. Sugar, caffeine and alcohol are notorious sleep disruptors. Magnesium deficiency can make it difficult for muscles to relax and cause restless leg syndrome.

In Chinese medicine it is noted that certain organs become more active at specific hours of the day. When wakefulness reoccurs at the same time each night it may be that a specific organ needs balancing. For example, waking during the period from 11 pm to 1 am is related to the gall bladder, 1 to 3 am to the liver, and 3 to 5 am to the lungs.

Medications that contribute to insomnia include anti-hypertensives, bronchodilators, calcium channel blockers, anti-depressants, corticosteroids, NSAIDs, anti-convulsants, and even hypnotic drugs taken to promote sleep. Dr. Holt feels that sleep deprivation in children is an overlooked cause of ADD/ADHD. The addictive drug Ritalin can upset sleep.

Meditation, yoga, tai chi, and daily aerobic exercise de-stress and balance the body making it easier to sleep at night. A warm salt bath scented with lavender or sandalwood essential oils before bed relaxes the body and mind and is a wonderful pre-sleep ritual. Avoiding disturbing or violent TV programs and movies at night or any time is highly advised to keep the mind free from stressful influences which can follow us to bed. It is best to keep computers and televisions out of the bedroom, reserving this special sanctuary for love-making and tranquil sleep. The Sounder Sleep System developed by Michael Krugman offers specific mini moves to do in bed that relax the body and mind (www.soundersleep.com). Thinking of things we are grateful for as we lie awake can instantly switch worrisome thoughts to pleasant feelings assisting the transition to peaceful sleep.

A comfortable bed and pillow and cool temperatures are also important for optimum rest. Keeping the window open to allow fresh air and the natural lullaby of crickets and frogs can ease us into sleep. It is believed that the sound frequencies emitted by nocturnal insects and amphibians (and morning bird song) serve to modulate our own frequencies and balance our energy field. Sleeping in a completely darkened room is also essential for signaling the pineal gland to secrete sleep-inducing melatonin.

Herbs that relax the nervous system and promote deep restful sleep are a safe natural alternative to toxic sleep drugs. A cup of chamomile tea can relax the nerves and soothe indigestion before bedtime. The herbal combination of valerian root, passion flower and hops is a favorite formula for calming the mind and relaxing the muscles paving the way to deep restorative sleep. Magnesium is also a good relaxant.

Indiumease, a relatively new liquid supplement, is a powerful sleep aid. Consisting of the trace mineral indium, an important essential element that is normally difficult to assimilate, this patented formula increases mineral absorption to all of the glands, helping to balance hormones. Indiumease also helps to relieve stress, balance blood sugar and thyroid, ease PMS and hot flashes, increase libido and energy, restore gray hair to its original color, and rejuvenate the entire system.

Though we have come to more fully understand the science of sleep and its importance to health and well-being, the sweet slumber we experience each night still remains one of life's greatest mysteries.

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