

ACUPUNCTURE

INTRODUCTION

Acupuncture is very old Asian technique of medicine and healing. The practitioners of acupuncture believe that the human body is ruled by two opposing forces, *Yin* and *Yang*. These forces must be in balance and in harmony and if they are not, illness results because of a disruption in the movement of *Qi* through the body: *this idea is the basis of acupuncture*. *Qi* (pronounced chee) is a life force that flows through channels in the body that are called *meridians*, and pain, disease, etc., occur when there is an imbalance or disruption in the flow, strength, and quality of *Qi* through the meridians. The acupuncturist inserts very fine needles – 0.15 to 0.30 mm in diameter – into the skin at certain distinct locations called *acupoints* where the meridians pass close to the surface. It is hoped that the needle insertion corrects the disruption in the flow of *Qi*, heals the patient, and promotes health.

Acupuncture was virtually unknown in the United States until the 1970s and even today many people consider it somewhat exotic and mysterious. However, it is also clearly gaining greater and greater acceptance by the American public. A National Health Interview Survey that was done in 2007 and published on the Natural Standard Database website noted that approximately 3.1 million adults in the United States had been treated with acupuncture the previous year.¹ The National Institutes of Health (An agency of the US Department of Health responsible for biomedical research) published a consensus paper on acupuncture that stated: “There is sufficient evidence of acupuncture’s value to expand its use into conventional medicine and to encourage further studies of its physiology and clinical value.”² The British Medical Association also recognizes acupuncture as a reasonable treatment for many conditions.

However, despite this growing popularity and the seeming movement of acupuncture into the mainstream of care, there is still considerable skepticism among the traditional medical community about the effectiveness of, and the scientific basis for acupuncture. The same National Institutes of Health consensus statement cited above also found that many of the studies that have investigated how well specific clinical conditions respond to acupuncture had methodological problems that limited their usefulness. There have been numerous studies that have indicated that sham acupuncture or placebo are as good as traditional acupuncture, and many people have concluded that the theoretical foundation of acupuncture – that there are meridians/channels that a vital life force flows through – has no basis in fact.^{3,4}

Ever since acupuncture has become well known and widely used in the Western world, two questions have been asked: *how* does acupuncture work, and *does* it really work? These questions have not been definitively answered despite years of research. There are many people who believe in acupuncture and depend on it, and there are many people who say that there are no proven benefits of acupuncture, any improvements in a patient’s condition are imagined, and it is no better than traditional medical treatments or placebos. But acupuncture is likely to become increasingly popular and nurses will need to understand this ancient medical technique.

OBJECTIVES

When the student has finished this module, he/she will be able to:

1. Identify three possible mechanisms by which acupuncture is thought to work.
2. Identify the general medical condition that is most often helped by acupuncture.
3. Identify a specific condition for which there is evidence that acupuncture can be helpful.
4. Identify two conditions that are contraindications for the use of acupuncture.

History of Acupuncture

Acupuncture has been practiced in the East for thousands of years. The first written mention of acupuncture dates to 600 BC., and a comprehensive book on acupuncture, *Zhen Jiu Jia I Jin*, was written in the third century AD.⁵ However, there is evidence that acupuncture may have been practiced long before those times, and if acupuncture itself was not practiced, it appears there was some knowledge of and speculation about the system of meridians.⁶ During the Ming Dynasty (1368-1644) *The Great Compendium of Acupuncture and Moxibustion* was published which described the a full set of 361 acupoints that are still taught and accepted today. However, the use and acceptance of acupuncture slowly fell into decline and in 1929 it was outlawed in China. After the Communists gained power in 1949, this law was repealed and acupuncture, along with other forms of traditional medicine, was once again widely practiced.

Although Westerners had learned of acupuncture a long time ago and it was practiced in France in the early 1800s, it was not until a New York Times editor, James Reston, fell ill while visiting China that acupuncture became widely known in the West. Reston needed emergency surgery for appendicitis, and it was initially reported that traditional anesthesia was not used during the operation. The press wrote that acupuncture alone was sufficient to keep him comfortable and pain free. However, it was later learned these reports were false; acupuncture was used – and used successfully – to prevent and treat post-operative nausea, and Americans now knew what acupuncture was. Acupuncture is now practiced worldwide

The Acupuncture Procedure

As mentioned previously, there are different styles of acupuncture, and the treatment procedure will differ depending on the particular practitioner. However, quite often an acupuncture session will be conducted in a way that will be familiar to most people. The session begins with an interview. The patient describes his/her signs and symptoms, tells the acupuncturist about past medical history, medications he/she is taking, and family medical history. The acupuncturist will perform a standard physical examination, but will also take special notice of the patient's tongue, ears, and pulses. The tongue will be examined for its color, surface irregularities, and the type and consistency of the coating on the tongue. It is felt that as the tongue is highly vascular and has a rich nerve supply; it

provides diagnostic clues about health and wellness. The condition of the radial pulse is thought to reflect the flow of Qi. The acupuncturist will also use familiar techniques of Western medicine such as palpation and auscultation. Inspection of the patient by the acupuncturist and the interview are considered very important parts of the initial exam.

Once the acupuncturist has determined the nature of the problem, the patient is placed in a comfortable position (most often lying down and facing up) and the sterile, one-time use needles are inserted; the depth of insertion can vary from 0.5 cm to 8 cm. (Note: The great majority of needle insertions are very shallow). As mentioned previously, the needles are very fine, much thinner than the smallest needles used for intradermal injections. The needles may then be manipulated by hand (in or out, rotated, continuously or intermittently), stimulated by electricity, heated with a burning herb, or simply left in place. The needles are typically left in place for 5 to 20 minutes. The number and frequency of the visits varies depending on the nature of the underlying problem and the response to treatment. The goal of the acupuncturist is to restore the flow of Qi to the area that is out of balance. The location of the needles depends on which meridian is thought to be affected. The patient may be advised to avoid strenuous activity, alcohol, large meals, and sexual activity for eight hours after a treatment. One treatment is not sufficient: four to ten is generally considered to be a reasonable number to determine if the patient's problem can be helped with acupuncture.

How Does Acupuncture Work? Examining The Evidence And Theories

There is evidence from animal and human studies that acupuncture *does* produce biologic responses. However, why these occur and what they mean has not been completely explained or understood, and perhaps nothing about acupuncture is more controversial than the issue of its mechanism of action.^{7,8} Unfortunately, although there has been a lot of research that has tried to prove or disprove whether or not acupuncture is effective for various medical conditions and diseases, there has been much less attention devoted to determining its possible mechanisms of action.. One of the biggest problems in finding out how acupuncture works is the elusiveness of the acupoints and the meridian system. Researchers have focused on anatomy and on physiological mechanisms to try and find the acupoints and the meridians, but investigations so far have been unable to definitively document the presence of either acupoints or meridians.⁹ The 1997 NIH consensus statement on acupuncture that supported its use also noted that “Despite considerable efforts to understand the anatomy and physiology of the acupuncture points, the anatomy and physiology of these points remains controversial.”

There have been many theories advanced about how acupuncture works: the most common ones have focused on its effects on the nervous system, by stimulating the release of opioid peptides, by affecting muscular and connective tissue, through the placebo effect, or through the hormonal system.

- Hormonal system: Adrenocorticotropic hormone (aka ACTH, is a hormone secreted by the anterior pituitary gland. It increases levels of cortisol, another hormone that affects blood pressure, blood sugar, and stress levels) levels have been shown to be elevated after acupuncture treatment. However, this stimulation

- of part of the hypothalamus-pituitary axis has not been consistently produced by acupuncture.¹⁰
- Nervous system: Acupuncture points are in close proximity to deep and superficial nerves, and in one study a response to acupuncture was prevented by an injection of a local anesthetic into an acupoint before needling.¹¹ However, although some researchers have tried to associate the deep and superficial nerves, motor points, neuromuscular attachments, and large peripheral nerves with acupoints, no neural structure has been unequivocally linked to the acupoints.¹²
 - Opioid peptides: The opioid peptides are substances produced by the body that mimic the effect of opioids. (These are also known as endorphins, i.e., *endogenous morphines*) There is a lot of evidence that suggests opioid peptides are released by acupuncture and this could explain the analgesic effect of acupuncture that is so often seen.¹³ This could also explain why acupuncture seems to be the most consistently effective when it is used for pain relief.
 - Muscular and connective tissue: Acupuncture needles are often manipulated by the practitioner. The manipulation is intended to produce a response called *de qi*; the patient feels an ache or heaviness in the area and the acupuncturist feels as if the needle is being grasped or tugged.¹⁴ This *de qi* effect is thought to be due to contraction or winding of the skin and/or connective tissue around the insertion site of the needle. Some researchers have speculated that this sends a mechanical signal that might cause release of cytokines (intercellular mediators that help generate an immune response) and vasoactive substances, influence intracellular signaling, influence blood flow, and activate sensory receptors.¹⁵
 - Placebo effect: The placebo effect (the word placebo is from Latin and essentially means “I shall please”) is a well known phenomenon, and there have been many clinical studies in which sham acupuncture has been as effective as actual needling.¹⁶ The issue is confused, however, by evidence that has shown that both sham acupuncture (which could be considered a placebo) and actual acupuncture produce changes in brain activity but in distinctly different patterns.¹⁷

Learning Break: The placebo effect may be why acupuncture works. However, the placebo effect has often been reported in the context of Western medicine, too. The difference seems to be that Western medical treatments – and the placebo effect, as well – involve structures and functions that have been documented, measured, etc., but there is still no conclusive evidence that acupoints and meridians even exist. Also, a placebo by definition is something that is inert (has no action, does not react with living tissue). Acupuncturists contend that acupuncture – placing needles through intact skin – cannot be considered inert. There has also been some success reported using acupuncture in veterinary medicine – an unlikely place a placebo to be effective.

Learning Break: A patient’s belief in a therapy may also have an impact on how well a therapy can work; this may be especially true of acupuncture. A recent study noted that patient’s with a positive expectation of the effectiveness of acupuncture responded positively to the treatment, while those who had diminished expectations reported less pain relief.¹⁸

The Medical Uses of Acupuncture

Does acupuncture work? That is still a controversial question. There has been an extensive amount of research on the usefulness of acupuncture and it seems as if acupuncture has efficacy for treating some issues and problems, but it would be inaccurate to say that it has been *proven* as a valid, effective therapy for all the conditions and pathologies it is used for. There is a lot of published research about the use of acupuncture for a wide variety of health issues, some of which supports its use, some of which does not. However, the common theme that is noted time and again is that much of the research is not high quality: small sample sizes, bias, and poor study design and other methodological issues limit the usefulness of the acupuncture data. Add to that the fact there are many ways to perform acupuncture procedures and the confusion gets deeper.

Reviewing *all* of the applications and uses of acupuncture and reviewing what it may or may not be able to do would be a lengthy process and in many instances, there is little data. However, for some medical conditions there is some good evidence that acupuncture can help, and it is worth looking at that information.

- Acupuncture for chronic low back pain: There have been many randomly controlled trials that have found that acupuncture can be effective in treating chronic low back pain. It has also been shown that acupuncture is better than traditional treatments, sham acupuncture, or watchful waiting for treating this condition. Not all authors, however, agree with these conclusions; some have found that acupuncture is no more useful than standard medical therapies.^{19,20}
- Acupuncture for headache: Several large, recent reviews of the literature have found that acupuncture can be a useful treatment for tension headaches.²¹
- Arthritis: Ten trials of the use of acupuncture as a treatment for osteoarthritis of the knee were examined and the authors concluded that it can help relieve both the pain and physical dysfunction of this disorder.²²
- Chronic neck and shoulder pain: These are conditions that are routinely treated by acupuncturists. There is some data that suggests acupuncture can provide relief for these problems, but reviews of the literature have been equivocal.²³
- Post-operative and/or chemotherapy-associated nausea and vomiting: Acupuncture has been effective in treating post-operative nausea and/or vomiting, and nausea and/or vomiting associated with chemotherapy.²⁴
- Dental pain: Acupuncture has also helped patients with dental pain.²⁴

The National Institutes of Health noted that there is well-demonstrated evidence of the effectiveness of acupuncture for treating chemotherapy-induced nausea, dental pain, nausea associated with pregnancy, and post-operative nausea. The Institute also indicated that it may be useful for treating addiction, asthma, carpal tunnel syndrome, epicondylitis, fibromyalgia, headache, low back pain, menstrual cramps, and stroke rehabilitation. The World Health Organization (WHO) recommends that acupuncture can be used to treat these conditions:

- Acute sinusitis
- Acute rhinitis
- Common cold
- Acute tonsillitis
- Acute bronchitis
- Bronchial asthma
- Acute conjunctivitis
- Cataracts (without complications)
- Myopia
- Central retinitis
- Toothache
- Pain after tooth extraction
- Gingivitis
- Pharyngitis
- Periarthritis humeroscapularis
- Tennis elbow
- Sciatica
- Low back pain
- Rheumatoid arthritis
- Spasm of the esophagus and cardia
- Hiccups
- Gastroptosis
- Acute and chronic gastritis
- Gastric hyperacidity
- Chronic duodenal ulcer
- Acute and chronic colitis
- Acute bacterial dysentery
- Constipation
- Diarrhea
- Paralytic ileus
- Headache
- Migraine
- Trigeminal neuralgia
- Facial paralysis
- Paralysis after apoplectic fit
- Peripheral neuropathy
- Paralysis caused by poliomyelitis
- Meniere's syndrome
- Neurogenic bladder dysfunction
- Nocturnal enuresis
- Intercostal neuralgia

Acupuncture has been utilized to treat a wide variety of problems, and especially for pain control there is a lot of positive experience beyond anecdotal evidence and case reports. The American Academy of Medical Acupuncture states that in the United States, acupuncture has its greatest success in treating pain, and most of the strong supporting evidence for the effectiveness of acupuncture has been in the area of pain control: the National Institute for Health does not agree.

But proof is still elusive, and although acupuncture has been shown many times to be an effective means of analgesia, *unequivocal* evidence that it works is lacking.²⁵

Acupuncture for Psychiatric Conditions

Chinese medicine believes that Qi exists in many forms, and *Shen* (the word means of the mind) is a spiritual form of Qi that is found in the heart. According to acupuncture practitioners, mental illness and/or psychiatric conditions occurs when there is an imbalance of Shen (Shen is equivalent to Qi. It is considered to be spirit or consciousness), and acupuncture has been used to treat a variety of psychiatric illnesses such as depression, anxiety disorders, and schizophrenia.

But although there has been a reasonable amount of research in using acupuncture in one form or another to treat these disorders, this research, like much of the research concerning acupuncture, has been inconclusive because the study groups have been small and the studies have not been well designed.²⁶ Depression would seem to be a good candidate for acupuncture treatment. Unlike the available drugs used to treat depression, acupuncture can be used by pregnant women, it does not interact with medications the patient may be taking, it does not decrease libido as do many of the selective serotonin reuptake inhibitors that are used to treat this disorder. Research has suggested that acupuncture can be useful to alleviate depression,^{27,28} perhaps by stimulating the release of serotonin or norepinephrine. However, relatively recent reviews of the literature found that the evidence for the effectiveness of acupuncture in treating depression is inconclusive.^{29,30} Acupuncture has also been used to treat anxiety, and again, there is evidence that it can be effective, but there is no real review of the data or definitive studies that have been done.^{31,32} There has been a limited amount of research using acupuncture to treat schizophrenia (a few case reports and one study), and a review of the literature did not find evidence that acupuncture was helpful for treating this condition.³³

Acupuncture for Substance Abuse

Acupuncture has been used to treat substance abuse and the signs and symptoms of drug withdrawal since 1972, there is still research being done in the area, and acupuncture in one form or another is in wide use in addiction programs around the world. The National Acupuncture Detoxification Association (NADA) in the United States has been in operation since 1985, and some addiction centers treat hundreds of patients every day using the NADA protocol of five acupuncture needles placed in the auricle (outer ear).

Yet despite its widespread popularity for this purpose, two important issues remain about using acupuncture to help patients with substance abuse problems. The first is that the mechanisms by which acupuncture helps people who abuse drugs are not understood

and have not been clearly identified. Acupuncture *may* diminish the discomfort of drug withdrawal by stimulating small nerve fibers and causing a release of neurotransmitters such as the monoamines and endorphins which can block pain signals. Acupuncture *may* also affect some of the neural structures and pathways that are thought to be involved in addictive behavior. However, these modes mechanisms of action are theoretical and unproven and the fact is that *no one knows how acupuncture works to treat drug addiction.*

The second issue is that *it has not been clearly proven that acupuncture effectively and reliably treats drug addiction.* The NADA protocol is very popular but its reliability and validity have never been proved, and there have been success stories reported in the medical literature, but when the available data is surveyed and closely examined, there can be only one conclusion; there is no definitive evidence that acupuncture can be successful in treating drug withdrawal, managing substance abuse rehabilitation, and/or preventing relapse. *The available research has been poorly designed and the number of studies with negative outcomes is far more than the number of studies with positive outcomes.*

Learning Break: A systematic review of the use of acupuncture for treating opiate addiction concluded that it was no better than placebo (Jordan), and the evidence that it can be used for cocaine addiction, alcohol addiction, and nicotine addiction is unconvincing.^{34,35,36,37,38}

It is not surprising that acupuncture continues to be a popular treatment for substance abuse. The process of addiction is very complex and still not well understood, and the success rate of traditional treatments for addictions has not been very high. Acupuncture offers a safe and simple way of getting help and perhaps with a better understanding of how acupuncture works, it will become a viable alternative for people addicted to drugs.

Acupuncture has also been investigated as a method to help people stop smoking. However, there is no strong, consistent evidence that acupuncture is an effective way to achieve smoking cessation.^{39,40}

Contraindications, Complications and Adverse Effects

Acupuncture is contraindicated for treating malignant tumors, in patients with bleeding disorders, and for the treatment of trauma or surgical emergencies. Some practitioners feel that pregnancy is a contraindication (there is a risk of inducing contractions) but others feel it can be used safely in these situations if the acupuncturist is well trained.

Acupuncture is often perceived and described as very safe, and the nature and the incidence of complications and adverse effects support this. Yet acupuncture, like all medical treatments, has risks. The most common are minor reactions such as nausea, bleeding, headache, pain, etc. The exact incidence of these is not known: for example, minor bleeding was reported to occur in 3% of patients in one large study and in 0.7% in another: for individual acupuncture practitioners, the rate of bleeding ranged from 0% to 53%.^{41,42} Other adverse effects include a needle that was lost or forgotten, a burn caused by moxibustion, cellulitis, fainting, sweating, anxiety, drowsiness, vomiting, and aggravation of the initial complaint.

Serious adverse effects associated with/caused by acupuncture have been reported. However, these effects are very rare, and a careful, well-trained practitioner can easily avoid them. These include pneumothorax, metal allergy, cardiac tamponade, penetration of the abdominal viscera, damage to peripheral nerves, damage to the spinal cord or spinal nerve roots, damage to peripheral blood vessels, pancreatitis, and infectious complications such as hepatitis B, abscesses, septicemia, and HIV.^{43,44} Pneumothorax and hepatitis B infections are the most common adverse effect by far. There have been 51 deaths that have been reported to be associated with acupuncture treatment.⁴⁵

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