

Clinical hypnosis and relaxation in surgery room, critical care and emergency, for pain and anxiety relief

Abstract

The intense pain and anxiety triggered by surgery and traumas are well established in the literature. Non-pharmacological intervention is a critical component of total pain management protocols. Clinical Hypnosis could be used always, as an adjunct to pharmacological and anesthesiological analgesia and procedures. This paper describes how works clinical hypnosis with examples of clinical hypnosis' techniques, which have been used effectively to dampen pain intensity and anxiety. This work is designed to improve the health cares' knowledge regarding how and when to use relaxation' techniques and clinical hypnosis in Surgery Room, in Critical Care and in Emergency.

Keywords: Clinical hypnosis, Relaxation, Surgery room, Critical care, Emergency, Pain, Anxiety

Volume 1 Issue 3 - 2014

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Received: July 30, 2014 | **Published:** August 26, 2014

Abbreviations: HPA, Hypothalamic-Pituitary-Adrenal; CRH, Corticotropin-Releasing Hormone; ACTH, Adrenocorticotropic Hormone; DHEA, Dehydroepiandrosterone; MCC, Mid Cingulate Cortex; CCZ, Caudal Cingulate motor Zone; MEM, Multiple Embedded Metaphor

Introduction

Multiple complaints of discomfort such as aches, pains and distress are a common finding in patients in Surgery room, Critical Care and in Emergency. Pain and anxiety are symptoms that patients fear significantly. To treat and alleviate pain and anxiety, physicians can perform various interventions, not only anesthesiological and pharmacological interventions, but also psychological. Several studies refer to the reciprocal relationship between pain and anxiety in surgery room and in perioperative setting in adults and children.^{1,2}

Creating a relaxed healing and healthy environment for patients, families, and staff, is an ongoing challenge.

I consider clinical Hypnosis and relaxation techniques, as adjuvant for pain and anxiety relief, in Surgery room, Critical Care and in Emergency.

Pain and anxiety management

Pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage." This definition of pain put forth by the International Association for the Study of Pain³ clearly clarify the distinction of pain and suffering.

Pain is a complex phenomenon involving both neurophysiological and psychological components.^{4,5} Pathophysiological mechanisms involve neural pathways, and a variety of pain-producing substances and modulating mechanisms. These include acetylcholine, serotonin, histamine, bradykinin, prostaglandins, substance P, somatostatin, cholecystokinin, vasoactive intestinal polypeptide, noradrenaline and endogenous opioid peptides. Pain and anxiety place the body under physical, physiological and psychological stress. Stress has

been reported to interrupt and delay the cascade of healing in several studies, including the pre-surgical stress.⁶ The biological mechanisms behind this may be explained through the stress-induced elevation of glucocorticoids and adrenaline and noradrenaline levels. Elevation of these stress hormones produces an immunosuppressive effect, reducing the infiltration and activation of neutrophils and macrophages,⁷ and also suppressing the production of pro-inflammatory cytokines IL-1 β and TNF- α .⁸

To relief patients with pain, it is essential to evaluate the cause of the pain, its severity, type, location, duration and quality among other factors. Emotions, individual attributes, cognitive, environmental and cultural factors, together with the emergency's focus of attention and level of control, all play a significant role in diminishing or magnifying the perception of pain.^{9,10} It is the perception of pain and the individual's physical and emotional reaction to the pain perception, that give us the opportunity to create treatment approaches that can provide relief. Anxiety/depression, self-focused attention, and pain, are significant predictors of panic-fear symptoms, lower self-efficacy, and more perceived interference in well-being of the patients, especially with severe illnesses in Critical Care.

The patients in Emergency should be reassured with a verbal communication, that although initially, the physician may not have a good feel for the genesis of the pain, but we have many modalities to relief pain; it is understood that the patient is suffering, and an appropriate cause for this suffering and the most effective treatment will be sought. The physician in emergency can offer a useful service in the diagnosis and treatment of pain in many complex cases. The art and science of anesthesiology practice have existed as a unique medical discipline for less than 150 years. During that time, the focus has changed from helping the patient tolerate surgical stress by rendering him insensible to pain, to controlling stress and the patient's physiologic responses to the perioperative period by careful titration of powerful pharmacologic means and the appreciation of sound curative judgment.

Anesthesiologists can use not only their drugs, nerve blocking and analgesic-prescribing skills, but can also coordinate some of the other

treatment strategies, such as relaxation techniques and hypnosis, as adjuvant in emergency, pre and post surgical interventions, and during procedures during regional anesthesia. By joining with colleagues skilled in behavioral, psychiatric and surgical management of pain states, the anesthesiologist can give a useful approach to these problems.¹¹ In surgery room, the anesthesiologists' care is directed toward both the patient he is managing and the surgeon performing the operation. The anesthesiologists' goals are to render the patient pain and anxiety free and amnesic, to preserve vital functions during the operation, and to offer to the patient during regional anesthesia a quiet, relaxed state of consciousness.

Current anesthesiologic practice requires that anesthesiological management extend into the pre- and postoperative period in addition to concentrating on the time between induction and emergence from anesthesia. The multiplicity of preoperative medications and the possibility of pharmacologic interaction between the wide variety of anesthesia, hypnotic, and analgesic medications used in the operating room demand close preoperative scrutiny. Additionally, plans must be made to discontinue, substitute, or redistribute various medications during the operation itself and in the immediate postoperative period.

The postoperative period is one of the multiple physiologic and pharmacologic changes. Too often, reversal of the anesthesia is regarded as a prime determinant of success, and most traditional assessments of patient progress ignore features that may have a significant impact on the quality of postoperative course. The immediate postoperative period is one of major physiologic changes for the patient, because of both the pharmacology surrounding reversal of anesthetic agents and the ongoing physiologic changes secondary to surgical trauma.

In surgery room, the anesthesiologists' care is directed toward both the patient he is managing and the surgeon performing the operation. The anesthesiologists' goals are to render the patient pain and anxiety free and amnesic, to preserve vital functions during the operation, and to offer to the patient during regional anesthesia a quiet, relaxed state of consciousness. Current anesthesiology practice requires that anesthesiological management extend into the pre- and postoperative period in addition to concentrating on the time between induction and emergence from anesthesia.

The patient's pain and anxiety should be acknowledged to be a very existent problem for the patient. Attempts to differentiate between "real" and "unreal" pain, "organic" and "psychosomatic" are usually fruitless and only succeed in challenging such patients to attempt to prove further the "reality" of their suffering. The patient can appreciate that there may not be just a technological solution to his problem, such as the use of a nerve block, or a pill, so the patient must be willing to undergo psychological and behavioral evaluation. Many factors may contribute to the symptoms. Trauma, serious illnesses, concomitant depression, impaired cortical function and chronic anxiety, may all be conditions in which the patients use the language and behavior of pain to communicate their distress.

The physiological indications of acute pain are:

- a) Dilated pupils
- b) Increased perspiration
- c) Increased rate/ force of heart rate
- d) Increased rate/depth of respirations
- e) Increased blood pressure

- f) Decreased urine output
- g) Decreased peristalsis
- h) Increased basal metabolic rate
- i) Decreased blood oxygenation
- j) increase HR, RR, PB
- k) shallow respirations
- l) vagal nerve tone
- m) pallor or flushing
- n) diaphoresis, palmar sweating
- o) ↓O₂ saturation
- p) EEG changes.

After critical trauma, growth hormone levels significantly increased within minutes, and beta endorphin, and prolactin were elevated proportionately with severity of injury. The adrenal response in critically ill patients, including trauma victims, has been debated over the last two decades.¹² Major surgery, like any critical situation, activates the hypothalamic-pituitary-adrenal (HPA) axis, mainly through the secretion of the hypothalamic corticotropin-releasing hormone (CRH). CRH stimulates pituitary Adrenocorticotropic Hormone (ACTH), which in turn stimulates cortisol production in the adrenal cortex. In general, the degree and duration of hormonal changes after surgery, including HPA axis alterations, depend on the severity of the surgical trauma.

At an early phase following major surgery, elevated cortisol is associated with high ACTH. Despite HPA activation and a concomitant rise in DHEA levels, DHEAS declines. Later, a remarkable dissociation between ACTH (low) and cortisol (high) is observed, which is attributed, at least in part, to increased adrenal responsiveness to ACTH.¹³

The adrenal cortex is also the primary source of circulating adrenal androgens, such as dehydroepiandrosterone (DHEA) and its sulphate ester DHEAS. Under normal circumstances, DHEA and DHEAS rise in synchrony with cortisol in response to ACTH. In critically ill patients, however, dissociation between DHEAS (low) and cortisol (high) has been described. In fact, the finding of low DHEAS has been considered as indicating an exhausted adrenal reserve.¹³ In conclusion, at an early phase following major surgery, elevated cortisol is associated with high ACTH, with the consequences on metabolic and cardiovascular response. We must consider the same in children. From unrecognized babies' pain, to new discoveries made on early emotional memory and sensory capacities, pain in childhood remains a complex field still to be explored, but we must always consider it.¹⁴

Different therapeutic actions are described in scientific papers, not only pharmacological and anesthesiological treatments, but also psychological interventions, because without treatment, pains may lead to a real risk of intellectual, affective and drive impoverishment for the suffering children.

In time-critical situations for which emergent administration of medication is needed, the verbal relaxed approach, or some distraction hypnotic techniques, may be associated with a more effective medication administration.

The Physiologic signs of pain in the neonates and in children are:¹⁵

a) Physiological Variables

- i. increase HR, RR, PB
- ii. shallow respirations
- iii. vagal nerve tone (shrill cry)
- iv. pallor or flushing
- v. diaphoresis, palmar sweating
- vi. ↓ O₂ saturation
- vii. EEG changes

b) Behavioral Variables

- i. Vocalizations
- c) Crying (often with apneic spells)
- d) Whimpering, groaning, moaning
- i. State changes
- e) Changes in sleep/wake cycles⁷
- f) Changes in activity level
- g) Agitation or listlessness
- i. Bodily Movements
- h) Limb withdrawal, swiping, or thrashing
- i) Rigidity
- j) Flaccidity
- k) Clenching of fists
- i. Facial expression (the most reliable sign)
- l) Eyes tightly closed or opened
- m) Mouth opened
- n) Furrowing or bulging of brow
- o) Quivering of chin
- p) Deepened nasolabial fold

In the final analysis, pain, in adults and children, is communicated as a behavior, for it is only by word, grimacing, posturing and other behavioral signals that we know another individual is in pain.

Pain and anxiety behaviors, in the cognitively impaired, are:

- a) Facial expression
 - i. Slight frown, frightened face
 - ii. Rapid blinking
- b) Verbalizations, vocalizations
 - i. Verbally abusive
 - ii. Calling out, chanting, grunting
- c) Body movements
 - i. Rigid, tense
 - ii. Fidgeting
 - iii. Increased pacing, rocking
- d) Changes in interpersonal interactions
 - i. Aggressive, combative, resisting care
 - ii. Decreased cultural interaction
 - iii. Socially inappropriate, disruptive
- e) Changes in activity patterns or routines
 - i. Refusing food
 - ii. Increased rest periods
 - iii. Sleep pattern changes
- f) Mental status changes
 - i. Crying, tears
 - ii. Increased confusion
 - iii. Irritable

In Critical Care, we must evaluate these signs. In Surgery Room, Critical Care and Emergency, we must consider acute and chronic

pain, and anxiety. We know that acute pain passes through the thalamus, and then on to the sensory cortex; while chronic pain travels through the hypothalamus, which is connected to the limbic system where emotional functioning (emotions or problems, such as anxiety or depression) seems to originate. No aspect of our mental life is more important to the quality and meaning of our existence than emotions. In view of the proliferation of increasingly fruitful exchanges between researches of different stripes, it is no longer useful to speak of the philosophy of emotion in isolation from the approaches of other disciplines, particularly psychology and neurology. When nociceptors are stimulated they transmit signals through sensory neurons in the spinal cord. These neurons release the excitatory neurotransmitter glutamate at their synapses.

If the signals are sent to the reticular formation and thalamus, the sensation of pain enters consciousness in a dull poorly localized manner. From the thalamus, the signal can travel to the somatosensory cortex in the cerebrum, when the pain is experienced as localized and having more specific qualities.¹⁶ Pain's complex influence on behavior implies that it involves an action component, although little is known about how the human brain adaptively translates painful sensations into actions. One of the cortical brain regions most consistently implicated in the processing of pain stimulation during neuroimaging experiments is the midcingulate cortex (MCC).^{17,18}

The consistent activation of premotor and motor-related regions during pain, including the midcingulate cortex (MCC), raises the question of whether these areas contribute to an action component. Specific motor-related areas, including the CCZ (the caudal cingulate motor zone), play a vital role in the control and execution of context-sensitive behavioral responses to pain. In contrast, bilateral insular cortex responded to pain stimulation regardless of action [19]. Normal acute pain modulates both autonomic and skeletomotor efference.²⁰ Cortical pain processing thus not only involves a sensory and affective representation of nociceptive input, but also provides the means for the adaptive modification of behavior through efferent channels. If the view that emotions are a kind of perception can be sustained, then the connection between emotion and cognition will have been secured. However, there is yet another way of establishing this connection, compatible with the perceptual model. This is to draw attention to the role of emotions as providing the framework for cognitions of the more conventional kind^{21,22} proposed this sort of account, according to which emotions are not so many perceptions as they are ways of seeing, species of determinate patterns of salience among objects of attention, lines of inquiry, and inferential strategies. Emotions make certain features of situations or arguments more prominent, giving them a weight in our experience that they would have lacked in the absence of emotion.²¹

Patients in Critical Care, are exposed to deep emotions, and they can feel chronic pain and anxiety. Chronic pain can be of many types and locations, and may or may not has particular tissue damage associated with it. This is to contrast it with acute pain, which is temporary, is related to specific tissue injury and reduces in intensity as the damaged area heals. Chronic pain is distinct from acute pain, in several ways. It is now believed that different neural pathways are traveled by chronic and acute pain. In chronic pain in Critical Care, there is a relationship between emotions, psychological state and the intensity of the pain experience. Stress, depression, or anxiety can all increase the intensity of the pain experience. Consequently, procedures that reduce stress, depression or anxiety can have the opposite effect and can reduce the intensity of the pain experience. While pain is going on, the body tries to immobilize the inflamed tissue (muscle

or joint area) by putting extra fluid there (oedema), much as a garden hose becomes stiff if the flow is stopped. Eventually, the chronic stiffness and disuse, causes muscle atrophy. The body begins to deposit calcium in the tissues and around the joints, in effect, to make an internal cast and mechanically immobilize the area. Therefore, the longer a pain patient does not use an area, the harder it will be to ever use it, and the more painful it will become. A significant percentage of Chronic Pain patients in Critical Care, have become addicted to their pain medication, and they don't have the complete pain and anxiety relief. They become addicted after increasing their dosage periodically in order to get the same level of relief (developing a tolerance to the drug), and their pain level goes up rapidly if they discontinue the drug (a withdrawal syndrome). In Critical Care, there is a deep relationship between emotions, psychological state and the intensity of the pain experience. A variety of methods are available to help patients manage their pain, anxiety and stress level. Usually, some combination of relaxation techniques and hypnosis, with medicines, can be applied for the best results. The only use of medicines for pain can also be a factor that prolongs and maintains the chronic pain condition. Most painkillers have powerful effects on other parts of the central nervous system. Typically, a pain management consists of several approaches to discovering which factors play the largest role in maintaining the pain. We perform psychological testing to determine any underlying causes of depression or anxiety, which should be treated in addition to the pain and which could be helping to maintain it.

We must consider:

- I. Pain assessment
- II. Pain treatment in Surgery Room, in Critical Care and in Emergency
 - I. Pain assessment
 - a. Ask about pain
 - b. Surgical pain
 - c. Pain in trauma
 - d. pain mechanisms
 - 1) Nociceptive
 - a) Somatic
 - b) Visceral
 - 2) Neuropathic
 - e. Pain score
 - f. Physical exam
 - g. Diagnostic studies
 - II. Pain treatment in Surgery Room, in Critical Care and in Emergency
 - a. Identify the underlying cause of pain
 - b. Treat the underlying illness and cause of pain
 - c. Evaluate new acute pain
 - d. Enhanced well-being and energy levels
 - e. Improvement of sleep
 - f. Nerve blocks
 - g. Local anesthetics
 - h. Intraspinal techniques
 - i. Epidural
 - j. Intrathecal
 - k. Cordotomy – anteriolateral spinothalamic tract is ablated
 - l. Drug therapies
 - m. Non-drug therapies (psychotherapy, relaxation techniques and hypnosis)
 - n. Psychosocial care
 - o. Spiritual care at the end of life

Health professionals should ask about pain, and the patient's self-report should be the primary source of assessment. Clinicians should assess pain with easily administered rating scales and should document the efficacy of pain relief at regular intervals after starting or changing treatment. Documentation forms should be readily accessible to all clinicians involved in the patient's care.

The initial evaluation of pain should include:

- a. A detailed history, including an assessment of pain intensity and characteristics.
- b. A physical examination.
- c. A psychosocial assessment.
- d. A diagnostic evaluation of signs and symptoms associated with the common cancer pain syndromes.

One routine clinical approach to pain assessment and management is summarized by the mnemonic "ABCDE":

- A. Ask about pain regularly. Assess pain systematically.
- B. Believe the patient and family in their reports of pain and what relieves it.
- C. Choose pain control options appropriate for the patient, family, and setting.
- D. Deliver interventions in a timely, logical, and coordinated fashion.
- E. Empower patients and their families.

A pain scale measures a patient's pain intensity or other features. Pain scales are based on self-report, observational (behavioral), or physiological data. Self-report is considered primary and should be obtained if possible (since pain is a quale by definition, and therefore, assessment based on any set scale of expected outcomes from similar cases can fail to provide useful clinical data). Many pain scales are available for neonates, infants, children, adolescents, adults, seniors, and persons whose communication is impaired.

The visual analogue scale or VAS, is a psychometric response scale which can be used in questionnaires. It is a assessment instrument for subjective characteristics or attitudes that cannot be directly measured. When answering to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line between two end-points. There is evidence showing that visual analogue scales have superior metrical characteristics than discrete scales, thus a wider range of statistical methods can be applied to the measurements. The McGill Pain Questionnaire, also known as the McGill pain index, is a scale of rating pain developed at McGill University by Melzack⁵ in 1975. It is a self-report questionnaire that allows individuals to give their doctor a good description of the quality and intensity of pain that they are experiencing. Users first select a peculiar word from each group that best reflects their pain. Users next review the list and select the three words from groups 1-10 that best describe their pain, two words from groups 11-15, the single word from the group 16, and after that one word from groups 17-20. After completing the questionnaire, users will have selected seven words that best describe their pain. Users can use some words more than once.⁵

The Wong-Baker Faces Pain Rating Scale (styled Wong-Baker FACES Pain Rating Scale) is a pain scale that was developed by Donna Wong and Connie Baker. The scale shows a series of faces ranging from a happy face at 0, "No hurt" to a crying face at 10 "Hurts worst". The patient (child) must choose the face that best describes how they are feeling. If the patient understands the scale and is capable of answering and if end points and adjective descriptors are carefully selected, each of these instruments can be valid and reliable.²³

Knowing factors that aggravate or relieve pain, helps clinicians to design a pain treatment plan. A psychosocial assessment should emphasize the effect of pain on patients and their families, as well as patients' preferences among pain management methods. Patients who are able to answer should be asked about the effectiveness of past and present pain treatments, such as antineoplastic therapy or specific pharmacologic and nonpharmacologic therapies. Pain can either be managed using pharmacological, interventional or psychological procedures (the last as adjuvant).

The recommendations about the assessment and management of pain include the use of:

- a. pharmacological therapy
- b. analgesics and adjuvant drugs
- c. WHO has developed a three-step "ladder" for cancer pain relief
- d. nerveblocks
- e. anesthesiological blocks
- f. palliative radiation and antineoplastic therapy
- g. palliative and ablative surgery
- h. physical modalities (acupuncture)
- i. non conventional remedies
- j. psychological and cognitive/behavior strategies: psychotherapy, relaxation and hypnosis techniques

Discussion

Clinical hypnosis and relaxation in surgery room, critical care and emergency for pain and anxiety relief. Patients may acquire behavioral aspects of their pain problems in emergency and along with psychological and tissue-damaging problems. Thus, such patients are unlikely to respond to therapy directed primarily at the tissue-damaging aspects, but may well need the combined efforts of conventional therapy aimed at the degenerative disease, psychological support, pharmacological treatment, and some behavior modification in an attempt to restore normal function.²⁴

Because the mechanisms of pain in Surgery Room, in Critical Care and in Emergency, may be complex, involving several causes, the patients often have difficulty obtaining an adequate diagnostic evaluation. Sometimes we ignore the psychological and behavioral components of pain. Thus, to evaluate patients with complaint pain in Surgery Room, in Critical Care and in Emergency, the specific psychological, social, and environmental characteristics as well as a conventional medical examination should be reviewed. Therefore, there are several different ways in which anesthesiologists, pain therapists and critical care' doctors, depending on their inclinations, can become involved in the management of pain patients in Surgery Room, in Critical Care and in Emergency. The patient can appreciate that there may not be only a pharmacological and anesthesiological solution to this problem such as the use of nerve block, an operation, or a pill. In critical care, acute and chronic pain, anxiety and depression are frequently associated in the same patient. Furthermore, the successful treatment of the anxiety is often associated with pain relief. In critical care, many chronic pain patients sometimes have reversed diurnal rhythms whereby they catnap during the day, reclining on couches and spent the night awake and restless. Hypnosis can often be quite successful in reestablishing a normal sleep pattern in such patients, often resulting in an improved sense of well-being and pain relief. Scientific studies indicate that humor, and distraction are effective with children and parents in relieving preoperative anxiety.²⁵

Although attention is a central theme in psychological science, hypnosis researchers rarely incorporate attentional findings into their work. As with other biological systems, attention has a distinct

anatomy that carries out basic psychological functions. Specific brain injuries, states, and drugs can all influence attentional networks. Investigation into these networks using modern neuroimaging techniques has revealed important mechanisms involved in attention. Underlining data from attentional networks, neuroimaging, and genetics, these findings should help to explain individual differences in hypnotizability and the neural systems subserving hypnosis.²⁶

Clinical hypnosis and relaxation interventions, act to psychologically dissociate the patient (adults and children) from pain, by activating higher cognitive and emotional regions in the brain. The full extent and awareness of pain is reduced, as seen in functional magnetic resonance imaging, which showed a dampened transmission to primary regions involved in emotional processing of pain (caudal anterior cingulate cortex) and the sensory component of pain (primary somatosensory cortex).²⁷ Distraction has also been shown to gate pain perception through stimulation of the periaqueductal gray, which was not activated during pain stimulus alone.²⁸

Hypnosis in Surgery Room, in Critical Care and in Emergency, may be useful:

- a. To have a good relaxation of body and mind.
- b. To facilitate ventilation and tidal volume
- c. To reduce anxiety (in critical care increases breathing in patients)
- d. To reduce panic
- e. To have a good pain relief
- f. To facilitate new patterns of thoughts, feelings and consciousness.
- g. To reduce depression
- h. To reduce sleep disturbances
- i. To reduce pre-operative anxiety
- j. To redefine a problem or situation.
- k. To bypass normal ego defences.
- l. To suggest solutions and new psychological options.
- m. To provide a gateway between the conscious and the unconscious mind.
- n. To increase communication.
- o. To facilitate retrieval of resource experiences.
- p. To improve mind-body relationship.
- q. To improve rehabilitation in Critical Care
- r. To improve psychology of self and self-realization.
- s. To understand the Higher Self in dying patients
- t. To understand the Self-consciousness.
- u. To lighten up the "spiritual" dimension in dying patients
- v. To accept Near-death experiences, death and dying.²⁴

In Critical Care and in Emergency, pain and anxiety can cause hypoventilation (decreased tidal volume) and hypoxemia (decreased PaO₂). Pain and anxiety can increase airway resistance (because of the presence of endotracheal tube and mechanical ventilator). A decreased tidal volume may result in hypoventilation. Surgical posture, pain and anxiety, may restrict or interfere with movements of the diaphragm: tidal volume is reduced, breathing will be fast and shallow. Rapid shallow breathing may cause a decrease in FRC functional residual capacity, and promote atelectasis. If tidal volume is reduced and respiratory rate does not increase proportionately, minute ventilation will decrease, PaO₂ may decrease and PaCO₂ may increase. Pain and anxiety can take hypoxemia (decreased PaO₂) in critical patients, but with hypnosis, most symptoms may be reduced significantly.

Pain is necessary in a physical sensation, to warn the person of damage. Research indicates that after the organism notes the disease or injury site, pain interferes with healing, and retards the eventual course leading to vitality. Reduction of pain and suffering is one of the primary targets of all treatments because reduction of pain is the beginning of

rapid recovery. Many researchers and clinicians have demonstrated that management of pain is a natural capacity housed in each person. However, pain is a deeply subjective experience. Successful treatment utilizes hypnotic trance to help patients relearn sub-cortical activity in the brain and afterwards to alter the sensations of pain and anxiety (self-talk). Symptoms are defined as preverbal, conditioned reflexes which at some sensate level make sense to patients; and are subconsciously designed, subsequently used to prevent awareness of experienced or subconscious distress. Relaxation and Hypnotic trance attempt to accelerate a patient's ability to reorganize thinking, to have a unique experience and simultaneously to learn the responsibility of personal health through self-involvement.²⁴

Was a Scottish surgeon, Esdaile,³⁰ who became famous for the use of hypnosis as a surgical anesthesia.²⁹ Esdaile³⁰ reported on hundreds of painless operations performed with hypnosis between 1840 and 1850. Esdaile's work overlapped the development of chemical anesthesia with the first use of nitrous oxide in 1844, ether in 1846, and chloroform in 1847. By the 1860s, chemical anesthesia essentially eliminated the use of hypnoanesthesia. In April of 2000, the International Journal of Clinical and Experimental Hypnosis published a special issue entitled "The Status of Hypnosis as an Empirically Validated Clinical Intervention." Within this issue, Guy Montgomery and colleagues presented a meta-analysis of 18 studies of hypnotically induced analgesia.³¹ As it had been found in several earlier studies, this report supported hypnotic analgesia as a valid and reliable phenomenon with 75% of the clinical and experimental subjects reporting pain relief. The authors conclude that based on the criteria set forth by Chambless and Hollon,³² "hypnotically suggested analgesia should be considered a well-established treatment". Patterson and Jenson³³ supported this position for both acute and chronic pain conditions.³⁴

We all know that anxiety increases the chances of postoperative pain, postoperative analgesic consumption, and also hospital stay and recovery. Hypnosis in surgery room can help the patient in less anxiety before and less pain later. There are good neurophysiologic reasons to believe that hypnosis is potentially a powerful tool to alter perception of pain and associated anxiety. It is entirely possible to substantially alter pain perception during surgical procedures by inducing hypnotic relaxation, transforming perception in parts of the body, or directing attention elsewhere. The key concept is that this psychological procedure actually changes pain experience as much as many analgesic medications and far more than placebos.³⁵⁻³⁸ There is recent evidence from studies of the placebo effect that activity in the anterior cingulate gyrus is linked to that in the periaqueductal gray, a brainstem region that is crucial to pain perception.³⁹ Hypnotic analgesia is real, no less palpable an analgesic than medication, although the pathways are different and do not seem to involve endogenous opiates.⁴⁰ Rather, hypnosis seems to involve brain activation via dopamine pathways.^{41,42} Thus, it is not surprising that hypnosis, which mobilizes attention pathways in the brain, can be used effectively to reduce pain perception and attendant anxiety. Hypnosis can be used today as an adjuvant to the chemical anesthesia in many surgical procedures, because it is completely non-toxic and shows excellent results for the hypnotizable subject. The greatest limit to its use in today's surgery is the lack of education by hospital personnel in its use, and their resulting failure to recommend its use for patients. There are also too few hypnotherapists with specific training and experience in this field.

The physical benefits of hypnosis in Surgery, in Critical Care and in Emergency are:

a. Enhanced surgical anesthesia means much less toxic anesthetics in the client's body, thus reduced complications of anesthesia

- b. quicker recovery
- c. facilitate ventilation and tidal volume
- d. reduced pain
- e. reduced blood flow to the area of the operation during the surgical procedure means less blood loss and quicker recovery
- f. reduced postoperative pain
- g. speeding up the post surgical healing process, including tissue and bone healing
- h. use of hypnosis to alter perception of pain.

Clinical hypnosis is very useful also in children and elderly patients.

The special problems in pain and anesthesia management in the elderly people are:

- a. Fear of increasing functional deficits
- b. Concerns with cognitive function
- c. High number of cognitively impaired
- d. Fear of hastening death in the frail elderly
- e. More depression
- f. Decreased socialization
- g. Sleep disturbances
- h. Communication barrier due to sensory or cognitive impairment
- i. Reluctance to report pain (associates pain with aging)
- j. Pain may be perceived as metaphor for serious disease or death

From a clinical perspective, the use of hypnosis to alter perception can be applied to the perception of pain in a number of effective ways. This is true not only for the sensation of pain, but also for the cognitive and emotional factors including attention, attitude, affect, attribution, and arousal. Although hundreds of creative suggestions and metaphors for pain control have been presented in the literature, Hilgard and Hilgard⁴³ propose three general classes of pain management approaches. These include:

- a. direct suggestion of pain reduction,
- b. alteration of the experience of pain, and
- c. redirection of attention.³⁴

We could use specific suggestions to help the patient achieve this state in surgery room. I want underline that hypnosis is not the mind control; you're not going to be asked to do anything embarrassing. It's not like taking a powerful drug that leaves you zonked out. Clinical hypnosis is more like focused attention, focused concentration, where you're able to let yourself relax and you're the person in charge. In 2014, APA the American Psychological Association, the Division 30 Executive Committee⁴⁴ prepared the following official definitions related to hypnosis:

- a. "Hypnosis is a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion.
- b. Hypnotic induction is a procedure designed to induce hypnosis.
- c. Hypnotizability is an individual's ability to experience suggested alterations in physiology, sensations, emotions, thoughts, or behavior during hypnosis.
- d. Hypnotherapy is the use of hypnosis in the treatment of a medical or psychological disorder or concern."

Lang's group conducted a prospective randomized controlled study of simple self-hypnotic relaxation, standard care, or structured empathic attention in 236 women undergoing large core needle breast biopsy. The women receiving only standard care experienced a significant increase in anxiety ($p > .001$), while anxiety did not change in the empathy group, and decreased significantly in the self-hypnosis group ($p < .001$). Pain increased significantly ($p < .001$) in all three

groups though less steeply with hypnosis and empathy than standard care. It was concluded that self-hypnosis more powerfully relieved anxiety without undue cost.⁴⁵

The techniques

Pain often requires more effort, but hypnosis provides many individuals with a way to experience focused, narrow attention, which redirects attention to thoughts or memories more pleasant than the pain. This visualization, may itself create physiological change.^{24,34} Ewin,⁴⁶ a surgeon and gifted hypnotist, notes that if patients with severe burns can be placed in trance soon after their injury and can imagine cool or cold conditions on the skin, the course of the injury changes.⁴⁷

I. Once hypnotized, suggestions were made specifically related to recovery from surgery. First, they need to learn to access this state while lying in bed, when they will practice going through the surgical procedure: (“Now, every time you are lying in bed at night, you go deep into this state...”).

II. Second, they will be trained to enter this state while entering the operating room and to remain in this state throughout the procedure: (“Now, when you lie on the gurney, and you feel its vibrations under your body, you automatically go deep...”).

III. Thirdly, we prepare the patient to access this state while lying in the recovery room and/or their own bedroom to activate the recovery suggestions.⁴⁶⁻⁴⁸

The way to work with patients is to train them to use all of these processes every day in the quietness of their own beds. Before surgery, a hypnosis tape or CD custom made for the patients can be very helpful to learn self-hypnosis. I am always looking for ways to improve the patient experience, and if I can do it without using drugs that’s really a good benefit. In Surgery Room, in Critical Care and in Emergency we can use these hypnotically methods for pain and anxiety relief.

The Hypnosis techniques in Surgery Room, in Critical Care and in Emergency are:

- a. Relaxation
- b. Direct and indirect suggestion^{47,48}
- c. Told it will ↓ pain (suggestion)
- d. Induction = being placed under hypnosis (distraction)
- e. Instructed to think of pain differently (reinterpretation)
- f. Hypnotized people:
 - i. will perform minor feats,
 - ii. won’t hurt self, others

I describe you some techniques to use Relaxation and Hypnosis.

Relaxation: The Seven- Minute Breathing Practice

In emergency and in critical care, after trauma and surgical posture, pain and anxiety may restrict or interfere with movements of the diaphragm: tidal volume is reduced, pain and anxiety can cause hypoventilation (decreased tidal volume) and hypoxemia (decreased PaO₂). We can use this technique, when patient presents the behavioral and anxiety components in pain and breathing. Through this technique we can feel the awareness of our breathing and to be more calm and relaxed. This relaxation technique derives from an ancient Hindu meditation, and in my opinion is very useful in Critical Care and in Emergency.

Relaxation: The Seven- Minute Practice

First minute:

Connecting ourselves to our inner Self through the awareness of our breathing,

Putting our attention on it... only attention... not concentration...
..... 4 minutes.....

5th minute:

Let’s stay like this... breathing... paying
attention to it... without effort... naturally...
When something distracts us, a thought, a sound, a voice far away,
Without effort, naturally we return our attention on our breathing...
Observing it...
Inhaling and exhaling... each time we distance ourselves...
We gently return to it...
So the saying goes
“Hundred times I fall and one hundred and one times I get up”

7th minute:

Let’s widen our awareness of ourselves and the universe so our breathing is the breathing of the whole world.

Clinical hypnosis in emergency and critical care: direct and indirect suggestions

“Indirect” suggestion is conceptualized in two distinct ways in the literature.

From an Ericksonian perspective “indirect” suggestions are theoretically approached as suggestions which can circumvent the censorship of consciousness to reach the “unconscious” where they can activate dormant potentials.^{47,48}

In contrast, from a research perspective “indirect” suggestion is operationally defined as a technique. Based on Ericksonian theory, it was claimed that “indirect” suggestion was more effective than traditional, “direct” suggestion. However, this claim could not be empirically substantiated.⁴⁹ Research on Ericksonian techniques and claims of effectiveness has been very sparse. Most of the focus on Ericksonian approaches has been on the development of techniques by the clinicians, seemingly independent of the meaning to the client. One of these interventions is the multiple embedded metaphor (MEM), a series of stories within stories. The underlying assumption is that in order to be effective the metaphor(s) needs to be processed outside of conscious awareness; with MEM some patients had changes in their presenting problems and felt the process to be helpful.⁵⁰

1) The Direct and indirect suggestions for the desensitization of the pain

During a medium- deep hypnotic status, obtained for example by a body-mind relaxation technique, the patient does not seem to react to the surrounding environment and usually seems to have a reduced sensitivity to painful stimulation, this happens even if you can have some or all of the reflexive or vegetative sign of the painful stimulation.

The best use therefore for this technique is to induce medium-deep relaxation up until the unconscious can register and activate through hypnotic suggestion a minor sensitivity to pain for a longer time even in a state of normal awakening, the use of this technique is to diminish the anxiety connected with pain, in the case of headaches where besides the body pain a great emotional dysfunction arises, also in the case of the phantom arm or leg after the amputation of an arm or leg or in the chronic pain of cancer patients.

- i. The methods most used during the state of deep relaxation or hypnosis are:
- ii. Direct instructions for the reduction of pain
- iii. The use of metaphors, video, virtual reality (they are good also for the children)⁵¹
- iv. The transportation of the painful symptom
- v. The detachment of pain through imagination.

2) The technique of the different interpretation of the symptoms

When a state of a lighter or deeper relaxation is achieved through different techniques, the patient is trained as to how to interpret the feeling of pain coming from a specific place in the body, and to transform it slowly from a feeling of pain, to a feeling of different nature, for example light or medium tension, moderate pressure, beneficial warmth or cold sensation of anesthetizing nature.

a) Example of anesthesia to one hand: "... While in a state of relaxation you can imagine to immerse your hand in a container of melting ice cubes and from the wrist up to the tip of your fingers the ice acts on your hand like a very powerful anesthesia... making it feel more and more insensitive. You will feel you hand becoming more and more insensitive ... and the anesthesia will increase.

You will also know that the anesthesia will last until you will repeat to yourself for three times "Everything is normal".

b) Exercise "warm hands": Duration: 5 or also only 3 minutes. During this exercise you will repeat to yourselves: " MY HANDS ARE WARM" During the period of "deep relaxation" you will imagine to keep your hand in front of the flames of an open oven, or under a solar lamp (UVB lamp), or immersed in hot water or any other thought of this kind that might come easy to you.

Exercises with different type of pain relief feeling: During this training you will imagine to find yourself in the circumstances correspondent to the situation here indicated:

- i. MY FEET ARE WARM, or as patient prefers:
- ii. MY FEET ARE COLD.
- iii. MY HANDS ARE COLD.
- iv. MY HANDS ARE WARM.

3) The Technique of the transferable symptom

After achieving relatively strong analgesia in a certain part of the body with the techniques described above, you aim to mentally transfer the analgesia to another part of the body (for instance from the hands to the abdomen or to the back) obtaining this way a gradual and progressive reduction of the global pain and suffering.

4) Self hypnosis for the treatment of acute pain

With this exercise you will be under hypnosis for different lengths of time measured in minutes or seconds.

ALWAYS THINK BEFORE YOU COUNT DOWN FROM 20 TO 1
"Now I will sleep for X minutes meanwhile my pain will decrease"
.....think again the same...
THEN begin to count down from 20 to 1.

While you are practicing this counting
you must use the following suggestion:

EVERY TIME FASTER AND DEEPER...
20... my pain will decrease... faster and deeper
19... my pain will decrease... faster and deeper
18... my pain will decrease... faster and deeper
... ..
0..... my pain will decrease ... faster and deeper
Try this exercise can be used with different length of time.
Try to do self-inductions that last 10, 15 , 20 seconds.
This technique can be used in the acute pain relief.

Conclusion

There are hundreds many different techniques, for adults and children, that you can learn on many textbooks, and attending the workshops, (organized by American Society of Clinical Hypnosis, American Society of Clinical and Experimental Hypnosis, American Psychological Association Division 30, International Society of Hypnosis, European Society of Hypnosis) on Clinical hypnosis around the world. While the body's physiological stress response is virtually universal, the way that stress impacts us is as unique to each individual as the events that cause us stress in the first place. Simply put, we all respond to stressful events in our own way, and our responses to stress affect us in ways that are unique as well. We all have our different ways of coping with pain anxiety and stress, and some of these techniques are healthier and more beneficial than others. Because we can't stop stressors from being a part of life, effective stress management as clinical hypnosis, focuses more on minimizing our triggers, altering our responses, and building up our resources and protective factors so that we're less negatively impacted by surgery, critical care, emergency, pain and suffering. Because pain is such an individual experience, it's important to have a stress relief plan that works.

Funding details

None.

Acknowledgments

None.

Conflicts of interests

Authors declare that there is no conflict of interest.

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