ANXIETY AND PAIN MANAGEMENT IN DENTAL OFFICE

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***Abstract*: Dental anxiety and phobia result in avoidance of dental care. It is a frequently encountered problem in dental offices. Formulating acceptable evidence-based therapies for such patients is essential, or else they can be a considerable source of stress for the dentist. These patients need to be identified at the earliest opportunity and their concerns addressed. The initial interaction between the dentist and the patient can reveal the presence of anxiety, fear, and phobia. In such situations, subjective evaluation by interviews and self-reporting on fear and anxiety scales and objective assessment of blood pressure, pulse rate, pulse oximetry, finger temperature, and galvanic skin response can greatly enhance the diagnosis and enable categorization of these individuals as mildly, moderately, or highly anxious or dental phobics. Broadly, dental anxiety can be managed by psychotherapeutic interventions, pharmacological interventions, or a combination of both, depending on the level of dental anxiety, patient characteristics, and clinical situations.**

***Keywords*: Dental anxiety, pain management, Dentistry, pharmacotherapy**

TOTAL NUMBER OF WORDS: 3731

INTRODUCTION

Anxiety is a term used for various disorders that cause nervousness, fear, apprehension, and worrying.These disorders affect the way we feel and behave and can cause physical and mental symptoms. Mild anxiety is vague and unsettling, while severe anxiety can seriously affect on day-to-day living.

The American Psychological Association (APA) defines anxiety as "an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure."It is important to know the difference between normal feelings of anxiety and an anxiety disorder that requires medical attention.(1)

When faced with potentially harmful or worrying triggers, feelings of anxiety are not only normal but necessary for survival.Ever since the earliest days of humanity, the approach of predators and incoming danger has set off alarms in the body and allowed an individual to take evasive action. These alarms become noticeable in the form of a raised heartbeat, sweating, and increased sensitivity to surroundings.A rush of adrenaline in response to danger causes these reactions. This adrenaline boost is known as the 'fight-fright-flight' response. It prepares humans to physically flee any threats to safety.

Anxieties now revolve around work, money, family life, health, and other crucial issues that demand a person's attention without necessarily requiring the 'fight-or-flight' reaction.That nervous feeling before an important life event or during a difficult situation is a natural echo of the original 'fight-fright-flight' reaction(2). It can still be essential to survival – anxiety about being hit by a car when crossing the street, for example, means that a person will instinctively look both ways to avoid danger. This review comprises of anxiety and pain in the dental office and ways to manage anxiety and pain in a dental clinic.

DENTAL ANXIETY

Fear of the dentist is known as odontophobia, dentophobia, or more casually as dental anxiety. As dental professionals, and not mental health professionals, our focus isn't as much on why people are afraid of the dentist, but instead on what we can do for those who are, so that they can receive compassionate and effective treatment. It's easy to blame mom and dad for all our shortcomings -- anxieties included. The truth is your parents' behavior towards the dentist and a dental visit can affect your experience. The way your siblings respond also plays a role.

TOOLS FOR MEASURING DENTAL ANXIETY

The Hamilton Anxiety Rating Scale (HAM-A) is a widely used and well-validated tool for measuring the severity of a patient's anxiety. It should be administered by an experienced clinician.

The major value of HAM-A is to assess the patient's response to a course of treatment, rather than as a diagnostic or screening tool. By administering the scale serially, a clinician can document the results of drug treatment or psychotherapy.

How to Score

The HAM-A probes 14 parameters and takes 15-20 minutes to complete the interview and score the results. Each item is scored on a 5-point scale, ranging from 0=not present to 4=severe.
Sensitivity: 85.7%

Specificity: 63.5%

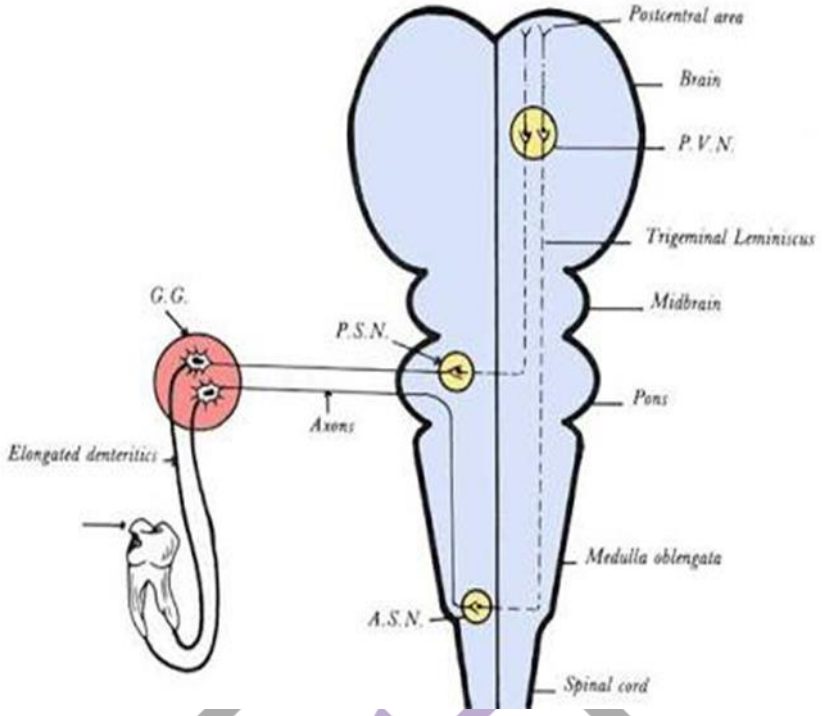
Modified Dental Anxiety Scale
The Modified Dental Anxiety Scale or MDAS was developed by Professor Gerry Humphris in 1995 at the University of St. Andrews in Scotland. It used the Corah's Dental Anxiety Scale as it's base and made changes and improvements to the original. The language was simplified for patients. They added a fifth question to ask about needle injections, a very common fear. All the questions became a little shorter and easier to understand in the modification.
It's nearly as widely known and can create accurate scores like the original. For patients, though, it's also quicker to take since the questions have been simplified. Whether your dentist uses one over the other, the outcome is the same – finding out how fearful you are and trying to find ways to help you combat that anxiety.

NATURE OF DENTAL ANXIETY
Before making any decision regarding the use of specific anxiety management approaches, it is important to be aware of the nature of a person's dental anxiety and fear because this can be a crucial determining factor in managing the problem. While it has generally been regarded that the underlying cause of anxiety is the result of direct negative dental experiences,25 the nature of dental anxiety is more complicated than what is commonly presumed.(3)

REASONS FOR DENTAL ANXIETY
It's estimated that around 1 in 7 adults have experienced high levels of dental anxiety following a visit to their dentist, with the problem affecting more women than men. Those who suffer from a dental phobia often avoid any appointments for a number of years and this type of anxiety will usually result in a deterioration of oral health.
The reasons behind why a person might develop dental anxiety will differ depending on the individual, but it's often thought this type of worry will be focused around negative childhood memories. Bad experiences at the dentist as a child may trigger a nervousness around the subject, based on a painful ordeal or the unpleasant smell, for example. Other causes may include a phobia of needles in the mouth, the sound of a dental drill or the uncertainty of having someone so close to you during the treatment.
Dental fear may also stem from:
- Prior painful or negative experiences
- Feeling helpless or out of control in a dental office situation
- Feeling embarrassed about neglecting your teeth
- Fear of being ridiculed about neglecting your teeth

PAIN
Pain, as defined by the International Association for the Study of Pain, is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."

Pain is not a single entity; it is part of the entire inflammatory process and one of the clinical signs of inflammation. Pain can be described as (1) acute, (2) chronic and associated with malignant disease, or (3) chronic and not associated with malignant disease. The duration of acute pain is usually hours to days, while chronic pain can last months to years and have associated problems of depression and anxiety.



Etiopathogenic classification of pain

A) Pain due to local causes
α. Pathologic changes in teeth and jaws
β. TMJ and associated muscles of mastication
χ. Nose and Para nasal diseases
δ. Oral mucosal diseases
ε. Lymph node diseases
Φ. Salivary gland disease
γ. Diseases of blood vessels
B) Pain along nerve trunk and central pathways
α) Trigeminal neuralgia and glassophyrangial neuralgia
β) Migraine and other types of head aches
χ) A typical facial palsy
X) Referred pain from other organs
α) Cervical spondalities
β) Angina pectoris
χ) Orophyrangial diseases
δ) Diseases of ENT (19)

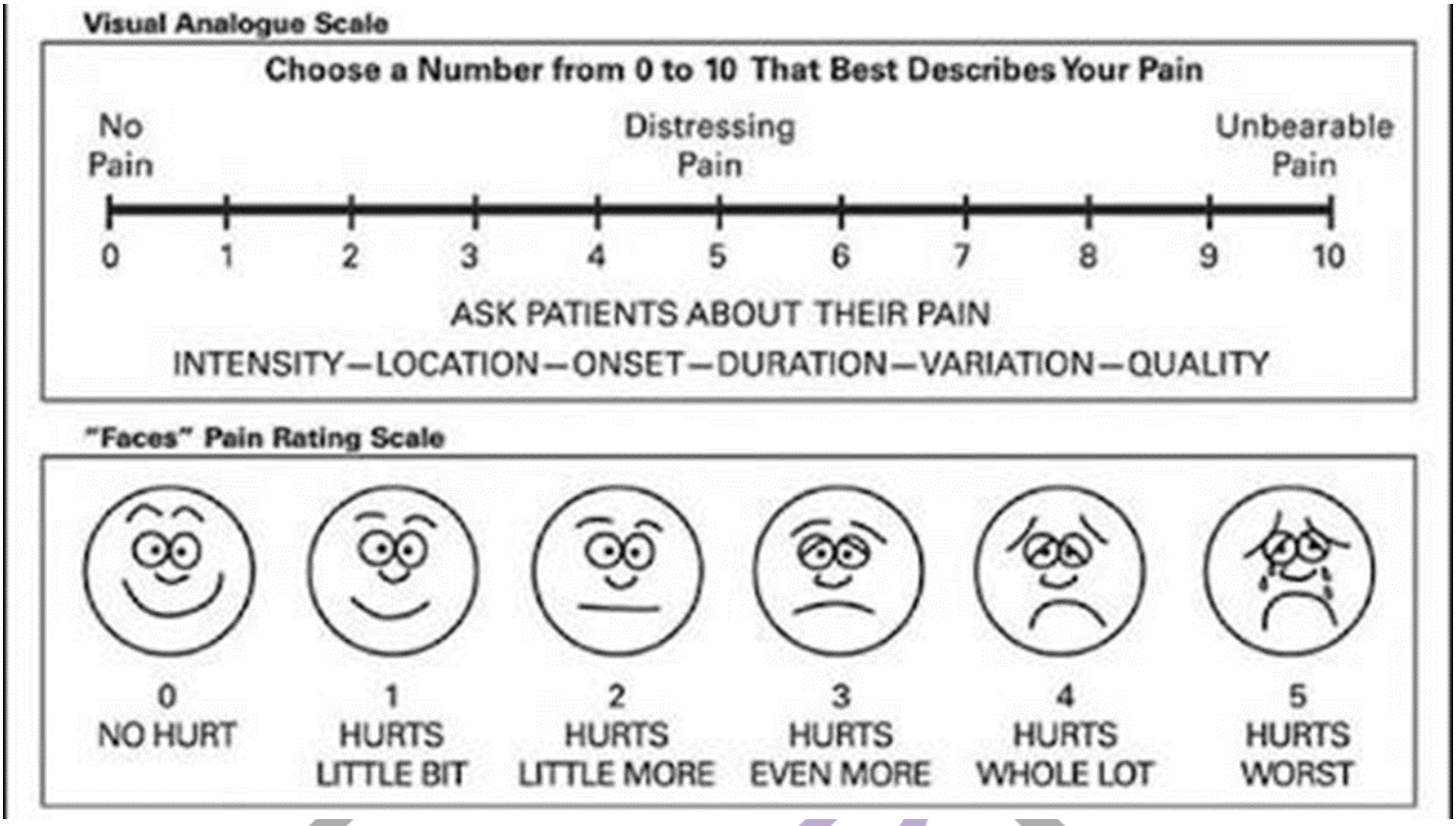
UNDERSTANDING ACUTE PAIN

Oral pain is associated with pulpitis,, pericoronitis, abscesses (endodontic/periodontal), trauma, and other conditions including temporomandibular disorders (TMDs) and masticatory muscle disorders. Dental procedures also can have pain as a result of more invasive procedures increasing this likelihood. Pain is provoked when a variety of inflammatory mediators such as bradykinin, histamine, leukotrienes, and prostaglandin E2 are released into the tissues. (4)These pain-inducing substances can be produced and released from cell membranes by trauma (eg, mechanical trauma to the soft tissues and bone during periodontal surgery), infection, and allergenic reactions. There-fore, part of the successful management of pain requires managing the development of inflammation.

ACUTE PAIN MANAGEMENT

The majority of dental pain is an acute response to inflammation. The acute pain associated with dental trauma, infection, or surgery is usually predictably managed pharmacologically. The key to pharmacologically managing pain is to provide a sufficient dose of a particular drug to minimize pain onset and give the patient comfort. The drug should be administered frequently to prevent the pain from becoming severe(5). The most effective way to maintain analgesia is to administer doses on a regularly scheduled basis for a specified period after the trauma. For example, after periodontal surgery, inflammation and pain usually peak 48 hours later. Thus, postoperative analgesic medication can be administered on a regular schedule, depending on the half-life of the drug (eg, every 4 hours), for 48 hours, then given as necessary.

TOOLS TO MEASURE PAIN



A Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. It is often used in epidemiologic and clinical research to measure the intensity or frequency of various symptoms.

MANAGEMENT OF DENTAL PAIN AND ANXIETY

The above methods are useful for all patients during a minor procedure. However, some dental office procedures may require pharmacological methods of pain control in addition to the preceding holistic methods. A variety of pharmacological options for pain control include local anesthesia, oral sedation, intramuscular (IM) sedation, and nitrous oxide sedation, allowing conscious sedation and pain management.

The administration of local anesthesia, sedation and general anesthesia is an integral part of the practice of dentistry. The American Dental Association is committed to the safe and effective use of these modalities by appropriately educated and trained dentists.

Anxiety and pain control can be de ned as the application of various physical, chemical and psychological modalities to the prevention and treatment of preoperative, operative and postoperative patient anxiety and pain to allow dental treatment to occur in a safe and effective manner. It involves all disciplines of dentistry and, as such, is one of the most important aspects of dental education. The intent of these Guidelines is to provide direction for the teaching of pain control and sedation to dentists and can be applied at all levels of dental education from predoctoral through continuing education. (6)They are designed to teach initial competency in pain control and minimal and moderate sedation techniques.

These Guidelines recognize that many dentists have acquired a high degree of competency in the use of anxiety and pain control techniques through a combination of instruction and experience. It is assumed that this has enabled these teachers and practitioners to meet the educational criteria described in this document. Techniques for the control of anxiety and pain in dentistry should include both psychological and pharmacological modalities. Psychological strategies should include simple relaxation techniques for the anxious patient and more comprehensive behavioral techniques to control pain. Pharmacological strategies should include not only local anesthetics but also sedatives, analgesics and other useful agents. Dentists should learn indications and techniques for administering these drugs enterally, parenterally and by inhalation as supplements to local anesthesia. In order to control the pain and anxiety in patients, pharmacologic sedation, anesthesia and analgesia are commonly used.

ANESTHESIA FOR PAIN MANAGEMENT

Administration of local anesthesia allows for a safe and efficient way of pain management — the most commonly used method in dentistry today. Local anesthetics may be used to anesthetize either an isolated tooth through an infiltration injection or a quadrant with the administration of a block injection. Local anesthetics function by temporarily blocking the action potential in the nerve at the site of administration. They may be short-acting, intermediate-acting, or long-acting.

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Injections

Local anesthetics injected in or near nerves may reduce pain and inflammation in particular parts of the body.

Nerve blocks

We inject special medicines into large nerve clusters to reduce or eliminate pain in particular parts of the body.

Opioid medicines

These pills may reduce pain to manageable levels when taken as directed.

Electrical stimulation

We use a small, handheld device to stimulate nerves through the skin to reduce pain.

Local anesthesia is the foundation of pain control in dentistry. Although the use of local anesthetics in dentistry has a long record of safety, dentists must be aware of the maximum safe dosage limit for each patient, since large doses of local anesthetics may increase the level of central nervous system depression with sedation. The use of minimal and moderate sedation requires an understanding of local anesthesia and the physiologic and pharmacologic implications of the local anesthetic agents when combined with the sedative agents

The knowledge, skill and clinical experience required for the safe administration of deep sedation and/or general anesthesia are beyond the scope of predoctoral and continuing education programs. Advanced education programs that teach deep sedation and/or general anesthesia to competency have specific teaching requirements described in the Commission on Dental Accreditation requirements for those advanced programs and represent the educational and clinical requirements for teaching deep sedation and/or general anesthesia in dentistry.

Topical Anesthetics

Topical anesthetics are used to numb the mouth or gums where the dental work will be done. The topical anesthetic like Lidocaine is given before the injection with a local anesthetic.

Electronically delivered anaesthesia

Also called transcutaneous electrical nerve stimulation [TENS], this is an alternative to the injection of anaesthesia. Adhesive pads are placed on the face and electrical impulses are sent through them to numb the treatment area.. The patient controls the level of stimulation through a hand-held device.. Another form of electronically delivered anaesthesia is called cranial electrotherapy stimulation. Here electrical signals are passed to the brain helping relaxation. Again, the patient controls the intensity of the current. The advantage of these approaches is that as soon as the device is switched off, the effect is instantly reversed and a patient can drive and carry on as normal immediately after they leave the dentists.

Nitrous Oxide (or laughing gas)

The patient inhales the gas through a rubber face mask and is one of the most common forms of sedation used in the dental office. Effects wear off quickly after the gas is turned off.

Intravenous Sedation

This form of pain and anxiety control involves injecting a sedative into a vein of a patient's arm or hand. This approach is usually reserved for extensive dental procedures or for an anxious patient. Dentists monitor the oxygen level of patients receiving IV sedation and may need to give such patients additional oxygen during the procedure. With IV sedation, the patient is awake but very relaxed.

Oral Sedation

An oral medication, like Halcion, helps patients relax by working on the central nervous system. Oral sedatives take about 30 minutes before their effects are felt and can cause drowsiness that may last for a few hours.

General Anesthesia

With this technique, the patient "sleeps" for the duration of the procedure. Patients requiring general anesthesia are usually treated in a hospital setting. This type of anesthesia has risks, which include a sudden drop in blood pressure and irregular heartbeats, so the patient needs to be closely monitored. General anesthesia is typically only used if extensive dental work is needed and when other forms of sedation or pain control are not sufficient to conquer fear.

METHODS OF MANAGING DENTAL ANXIETY

DENTAL OFFICE ENVIRONMENT:

Dental office ambience can play a significant role in initiating dental fear and anxiety. Receptionists, dental nurses, and dental hygienists are crucial personnel in creating an apt atmosphere in the dental office. They should be positive and caring, and elicit information from the patients in a unhurried concerned tone to make the patients comfortable. The office atmosphere can be made calm and unthreatening by the playing of soft music and avoidance of bright lights. Importantly, anxious patients should not be made to wait too long, so that they have less time to absorb negative experiences; additionally longer waiting times give them time to recall the threatening stimuli.(8)

AROMATHERAPY

Introducing pleasant ambient odors to the dental environment can also help to reduce anxiety by masking the smell of eugenol and by the potential anxiolytic effects of the odors themselves. Smell can trigger an array of emotions, and can condition a patient negatively toward dental treatment. Aromatherapy is an alternative treatment approach, wherein essential oils of aromatic plants are used to produce positive physiological or pharmacological effects through the sense of smell. Inhalation of pleasant scents such as essential oils has an anxiolytic effect and improves mood.(9,10)

PSYCHOLOGICAL THERAPY:

Behavior-management techniques Behavior modification is based on the principles of learning, both in terms of classical conditioning or operant conditioning and of social learning. It aims to change undesirable behavior in certain situations through learning. The strategies involve relaxation along with guided imagery and adjuvant use of physiological monitoring using biofeedback, hypnosis, acupuncture, distraction, positive reinforcement, stop-signaling, and exposure-based treatments, such as systematic desensitization, "tell-show-do", and modeling.(11)

Distraction strategies

One way to reduce stress and anxiety is to distract yourself with something pleasant. Bring an iPod or other personal listening device with your favorite music. Some dentists have these in their offices that can be borrowed, and others are beginning to offer virtual-reality goggles, which provide images and sounds to take your mind off of the work your dentist is performing in your mouth.(12)

Guided imagery

This is the technique of imaging a pleasant experience or a particularly soothing environment. By concentrating on creating as much detail as possible, your mind becomes absorbed in this task rather than focusing on what the dentist is doing.

RELAXATION THERAPY

A relaxation response is the opposite of a stress response, and when practiced regularly it not only lowers stress and anxiety levels but also enables an individual to cope with the symptoms of anxiety. This can be achieved by both deep breathing and muscle relaxation. Once a person is physically relaxed, it is impossible to be psychologically upset at the same time. Anxiety-provoking stimuli give rise to physical tension, which in turn increases the person's perception of anxiety.(13,14)

HYPNOTHERAPY

Clinical hypnosis (from the Greek hypnos [sleep]), although criticized and misunderstood, has been successfully used in medicine and dentistry. The term "hypnosis" denotes an interaction between one person – the "hypnotist" – and another person or people – the "subjects". In this interaction, the hypnotist attempts to influence the subjects' perceptions, feelings, thinking, and behavior by asking them to concentrate on ideas and images that may evoke the intended effects. The verbal communications that the hypnotist uses to achieve these effects are termed "suggestions". Suggestions differ from everyday kinds of instructions in that they imply that a "successful" response is experienced by the subject as having a quality of involuntariness or effortlessness. They can be used to induce relaxation, as an adjunct to inhalation sedation, to alleviate pain, anxiety, and stress, in reducing problems with excessive gag reflex, and may also be a part of CBT. The techniques have pre- and postsuggestion components. (15,16)The presuggestion component involves attentional focusing through the use of imagery, distraction, or relaxation, and is similar to other relaxation techniques. Subjects focus on relaxation, and passively disregard intrusive thoughts. The postsuggestion component involves the continued use of the new behavior following the termination of hypnosis. Individuals widely vary in their hypnotic susceptibility and suggestibility, although the reasons for these differences are incompletely understood. It is inexpensive, and has a very low risk of side effects. The technique needs to be avoided in those with mental health problems, personality disorders, and neurodegenerative disorders. Dentists require special training before they can practice hypnotherapy.

Acupuncture

Acupuncture is a technique, 89 wherein the disease is treated by inserting needles at various points on the body, known as acupuncture points. It has been reported that acupuncture is effective in treating dental problems such as anxiety, temporomandibular dysfunction syndrome, pain, and Sjögren's syndrome.(17) It is a simple, inexpensive treatment modality that requires special training before it can be incorporated into practice. Reports on the use of auricular acupuncture for treating chronic and acute anxiety have shown promising results.A randomized controlled trial comparing auricular acupuncture with intranasal midazolam for managing dental anxiety suggested that both treatment methods were similarly effective. Though inconclusive, systematic reviews have suggested acupuncture as a promising therapy for the management of anxiety disorders in a dental setting. In a recent systematic review and meta-analysis on the effect of acupressure on anxiety, Au et al concluded that it was effective in providing immediate relief of pretreatment anxiety among adults and had a medium effect size. However, conflicting results were found for improvements on physiological indicators.(18)

POSITIVE REINFORCEMENT

Positive reinforcement is an effective technique to reward desired behaviors and thus strengthens the recurrence of those behaviors. Reinforcers include positive voice modulation, facial expression, verbal praise, and appropriate physical demonstrations of affection by all members of the dental team. These should be individualized, frequently provided, and varied over time.(19)

Diet

L tryopthan an amino acid is main dietary supplement brain and spinal cord serotoninergic neurons are actively in nociceptive receptors as well as in analgesic effect of opiates. Increased activity of serotonin inter neuron is associated with analgesia and enhanced drug potency. Case was reported where pain relief was not possible even after 30 mg of intravenous morphine. But pain is controlled by 4 grams of L tryptophan per day for several weeks.

Adequate dosage: (20)

1. L tryptophan 4 grams of per day
2. Low protein, low fat, high carbohydrate

3. Vitamin B-6 10-25 mg/day
4. Four weeks or more continuous therapy is required.
Physical Therapy

CONCLUSION

Dental anxiety is the best defined variable to determine pain awareness during treatment and painful sensation is related to local anesthetic procedures. There are evidences that patient-related sociodemographic factors do not determine pain, but that dentists' attitudes are an important factor for the presence of pain. Dental anxiety plays a major role in the avoidance of dental treatment of approximately 35 million Americans .What can be done about this? Dental professionals can help these individuals overcome their fear in order to receive adequate treatment to improve their oral health as well as their systemic and social health. Before the researcher conducted the survey and analyzed the results, it was hypothesized that dental hygienists had some familiarity of alternative pain control methods, but that they were only being used minimally in the dental setting. (21)

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