Review Article

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Role of Complementary Medicine in Periodontics.

Abstract :
Health care practices that are not a part of a country's tradition and are not integrated into the dominant health care system are called Complementary and Alternative Medicine. The most common Complementary and Alternative Medicine therapies include Acupuncture, Ayurveda medicine, Homeopathy, Naturopathy, chiropractic therapy, Herbal medicines, massage therapy, biofeedback, Hypnosis, Meditation, Deep breathing exercises, Yoga and Tai Chi. The term "periodontal disease," refers to both gingivitis and periodontitis. Periodontitis follows gingivitis and is influenced by the individual's immune inflammatory response which involves the destruction of the supporting structures of the teeth, including periodontal ligaments, bones, and soft tissues. Periodontitis demands serious concern because it is a direct cause of tooth mortality. Alternative medications, which are having many beneficial properties, are a good choice for the prevention or treatment of oral diseases without any side effects. In a developing country such as India, several people cannot even afford their daily basic expenses, and for them, these alternative medicines will be a boon.

Keyword: Complementary Medicine, Alternative Medicine, Periodontics, Periodontitis

Introduction;

The mildest form of periodontal disease is Gingivitis, which is caused by accumulation of dental plaque on teeth adjacent to the gingiva. Gingivitis does not affect the underlying supporting structures and is reversible in nature. Periodontitis is a chronic immune inflammatory disease which results in loss of connective tissue and bone support. Common forms of periodontal disease have been associated with adverse pregnancy outcomes, cardiovascular disease, stroke, pulmonary disease, and diabetes. Prevention and treatment of periodontal diseases are aimed at controlling the bacterial biofilm and other risk factors, arresting disease progression, and restoring lost tooth support. [1]

Alternative medicine also called complementary or integrative medicine, usually discuss and advise patients on any available alternate therapies. As the name suggests "alternative", means that its basis lies in a non-drug approach. [2]

In General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine, published in 2000 by the World Health Organization (WHO): Complementary and Alternative Medicine was defined as a broad set of health care practices that are not part of that country's tradition and are not integrated into the dominant health care system.

Complementary and Alternative Medicine was defined by the National Centre for Complementary and Alternative Medicine, United States, in 2002 as "a group of diverse medical and healthcare systems, therapies, and products that are not presently considered to be conventional medicine."

Alternative medicine is often used interchangeably with terms like complementary medicine, integrative medicine, holistic medicine, fringe medicine, unconventional medicine.

Apart from conventional allopathic therapies, complementary and alternative medicines are also used for the treatment of various diseases as well as for maintaining good oral health.[3]

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The most common Complementary and Alternative Medicine therapies include Acupuncture, Ayurveda medicine, Homeopathy, Naturopathy, megavitamin therapy, chiropractic therapy, Herbal medicines, massage therapy, biofeedback, Hypnosis, Meditation, Deep breathing exercises, Yoga, Tai Chi, Prayer for healing, and Reiki.[4]

Acupuncture;

The word acupuncture is derived from the Latin "acus," meaning a needle, and "puncture," meaning "to prick" with a needle (According to Complementary Medicine & the National Health Service, 1996). Acupuncture uses very fine needles to gently prick specific points of the body to promote healing, relieve stress and anxiety, and reduce pain [5].

Indications of acupuncture/acupressure in Periodontics and their corresponding trigger points include the following, for severe gingival redness and inflammation of the mandibular region. Acupuncture points include Stomach (ST) 6 (Jiache): located over the masseter muscle anterior to the angle of the mandible and ST 7 (Xiaguan): located in the centre of the depression of the lower margin of the zygomatic arch, anterior to the TMJ. [6]

For Dental anaesthesia corresponding trigger points include:

1. Upper incisors: GV 26 (Renzhong): located at the junction of the upper one-third and lower two-thirds of the philtrum of the upper lip. Large Intestine (LI) 20 (Yingxiang): located at the midpoint on the line drawn horizontally from the highest point of the ala nasi towards the nasolabial groove on the opposite side.
2. Upper Canine: Small intestine (SI) 18 (Quanliao): located just below the inferior border of the zygomatic bone at a level vertically below the outer canthus of the eye.
3. For Premolar points are located at ST 6 and for Molars ST 7
4. For lower incisor, canine, premolar, and molars and the gag reflex: CV 24 (Chengjiang): located 0.5 t-sun inside the anterior natural hairline at the midline.[7]

To relieve periodontal/gingival pain and postoperative pain Acupuncture points include the Large intestine (LI) 4 (Hegu): located on the highest point of the bulge made by the first dorsal interosseus muscle when the thumb and index finger are held close together in adduction. LI 11(Quchi): Semiflex the elbow and take the lateral end of the elbow crease.[8]

For management of Bad breath, Pericardium(Per) 7 (Daling): located at the midpoint of the distal transverse wrist crease between the tendons of the flexor carpi radialis and palmaris longus muscles. Per 8 (Laogong): located at the middle of the palm. The fingers at the metacarpophalangeal and interphalangeal joints should be flexed and be touching the centre of the palm. This point lies between the tip of the middle and ring fingers, which is close to the third metacarpal bone.[9]

For Gingival inflammation, ST 45 (Lidui): located 0.1 t-sun proximal to the lateral side of the corner of the nail of the second toe and Kidney (KI) 3 (Taixi): located midway between the tip of the medial malleolus and Achilles tendon, just opposite the Urinary bladder (UB 60).

In case of periodontitis of the maxillary teeth, points include ST 44 (Nesting): located on the dorsal aspect of the foot 0.5 t-sun proximal to the web space between the second and third toes.[10].

Research done by Lisboa et al (2015) demonstrated the effects of electro acupuncture on ligature-induced periodontitis in rats. For treatment large intestine meridian points LI4 and LI11 and stomach meridian points ST36 and ST44 were used. The results showed decreased expression of proinflammatory mediators IL-1 and MMP-8. [11]

A Study by Rosted and Bundergard in 2003 showed a decrease in induction time, 62 seconds in test group to 2 minutes in the control group which received only nerve block. Test group received local acupuncture before injection of Inferior alveolar nerve block with prilocaine hydrochloride. [12]

Zilstra et al showed that the acupuncture therapy stimulates the release of endorphins (Calcitonin gene related peptide and substance P) with potent anti inflammatory action. [13]

Karst et al conducted a study assessing dental anxiety by auricular acupuncture. Test group compared the efficacy of auricular acupuncture with intranasal midazolam whereas control group received no treatment for anxiety. Test group showed improved compliance and reduced anxiety. [14]

Acupressure:

Acupressure is the ancient Chinese healing method of applying pressure to certain points of the body to relieve pain. Acupressure is often used during anaesthesia injections to reduce anxiety and minimize pain [15].

Mechanism of action includes pressing or massaging the acupressure points on the body. A session typically lasts for about 1 hour. One may need several sessions to obtain the best results. Some proponents claim acupressure not only treats the energy fields and body but also the mind, emotions, and spirit.

Applications in Periodontics include Gingival/periodontal pain, Postoperative pain, pain due to occlusal trauma, relieves tension and anxiety before surgery and relieves shock during surgery and helps increase blood circulation after surgery [16].

Aromatherapy:

The art and science of using volatile oils for psychological and physical well-being are called aromatherapy. These volatile oils are derived from plants. Essential oils are used the most in aromatherapy due to the innumerable benefits they have on the mind-body system [17].

Clove oil (90% eugenol) acts as a mild oral anaesthetic cures mouth sores, ulcers, and sore gums. It has a "strong activity" against bacteria associated with plaque formation and helps to reduce bad breath. It also helps to numb tooth pain and combats bacterial infections and inflammation [18, 19, 20]. Lemon essential oil acts as a good stimulant of the body's immune system and helps to cure gingivitis, gingival herpetic stomatitis, and mouth ulcers [21]. Orange oil acts as an anti-depressant, it is also an anti-inflammatory and antiseptic and supports the healing process in cases of inflamed gums and periodontal disease [22]. The antibacterial properties of basil can prevent plaque formation, dental caries, and bad breath. Eucalyptus oil appears to inhibit the formation of dental plaque and effectively kills several strains of staphylococcus bacteria to help heal mouth sores and gum disorders [23]. Myrrh essential oil helps treat gingivitis and mouth ulcers [24].

Soukoulis and Hirsch (2004) found out that tea tree oil is effective in reducing gingivitis but not in reducing plaque.[25] Different studies in 2008 by de Oliveira SM et al and Asokan S et al observed a significant reduction of plaque and gingivitis by the usage of aloe vera as well as coconut oil or sesame oil.[26,27] Salvatori et al.(2017) found out in their study that tree oil can reduce gingivitis.[28]

Study by Shaila et al in 2014, using essential oil mouth rinse containing tea tree oil, clove oil and basil for 21 days concluded a decreased gingival index, plaque index with .significant reduction in microbial colony forming units. [29]

Ayurveda and Herbal Medicine:

Originating from the ancient Indian civilization, Ayurveda caters to the needs of the common man because of its ease of availability in the Indian scenario. Ayurvedic drugs are more curative, long-term effective, and cheaper than other modern medicines. Ayurvedic drugs are associated with limited or no side effects as these are indigenous preparations from natural resources.

Herbal extracts are potent inhibitors of pathologically elevated collagenases and hence may be used as an alternative adjunct in the management of the periodontal disease. A meta-analysis conducted in 2016 has shown that a wide range of newer herbal mouthwashes is available, but their potential use and recommendations need to be validated. Out of the 11 analysed studies, only two studies favoured the use of herbal products while four studies favoured the use of chlorhexidine. The rest of the five studies kept herbal mouthwashes and chlorhexidine at par with each other.[30]

Mittal N et al (2018) used powder of A. catechu, menthol, and camphor in the proportion of 91%, 2.7%, and 6.3%, respectively, has reported 87%–95% reduction in plaque, 70%–72% reduction in gingivitis, and 80%–95% reduction in dental calculus, in merely 15 days.[31]Amrutheshet al (2008) recommended the use of Dashansanskarchurana for brushing and Khadiradivati for chewing as a treatment for periodontal abscess.[32]. Neem leaf extract has been shown to reduces bacteria and plaque levels that cause the progression of periodontitis. [33]

It was explained in the studies of both Duailibe et al.(2007) and Hegde et al. (2013)that propolis has in vivo antimicrobial activity against Streptococcus mutans.[34,35] A study by Rodrigues et al. in 2009 found out that Lippia Sidoides gel is an effective gingivitis controlling agent but not a good

antiplaque agent.[36] Paterniti et al. and Barrella et al.(2012) explained that H. perforatum extract and Ipomoea alba L extract can reduce periodontitis.[37] Patel et al (2012), in their study, observed that miswak can be an effective adjunct to toothbrushing in reducing plaque and gingivitis.[38] Hosamane et al.(2014) conducted a study in which tulsi or basil is found to be an effective antioxidant, anti-inflammatory, antipyretic, anticancer, and analgesic.[39] Study of Shettiet al. (2016) revealed that S. persica (miswak) can also act as a good chemical plaque control agent.[40] Baeshenet al. (2017) concluded that miswak is as effective as toothbrushing for plaque removal.[41]

Homeopathy:

Homoeopathy takes a holistic approach towards the sick individual through the promotion of inner balance at mental, emotional, spiritual and physical levels. When periodontitis is concerned there are many effective medicines are available in homoeopathy, but the selection depends upon the individuality of the patient, considering the mental and physical symptoms.

Mercurius sol 30 is one of the top remedies for the inflammation of gums. Merc sol is prescribed where the gums inflamed, painful which is purple, swollen and spongy. Kreosotum 30 is another effective remedy for periodontitis. Carbo vegetabil is 30 is effective for inflammation of gums with scorbutic gums. Alumen 30 is best for periodontitis with loose teeth, swollen, inflamed and spongy gums. Hepar sulphur 30 is indicated, where the gums and mouth are painful to touch and bleed easily. Phosphorus 30 and Silicea is best for inflammation of gums where the gum is sensitive to cold air and cold water. Staphysagria 30 is best for the inflammation of gums with teeth decay. [42]

Naturopathy:

Epigallocatechin gallate (EGCG) is the major catechin found in green tea and can be used in the treatment of periodontitis. EGCG has an anti-inflammatory effect on human gingival fibroblasts. EGCG has been shown to destroy established P. gingivalis biofilms or plaques, due to its ability to generate hydrogen peroxide that destroys the bacterial cell wall and also inhibits the formation of the biofilm. It was found that the catechin mouthwash decreased bad breath or halitosis associated with periodontal disease. Green-tea catechin may also prevent alveolar bone resorption that occurs in periodontal disease, thereby reducing the risk of tooth loss.[43]

Vitamin C enhances immune system function and influences infectious diseases. Vitamin C deficiency may contribute to periodontitis severity and therefore, sufficient levels can be protective. Periodontal disease is associated with oxidative stress and the production of reactive oxygen species. Vitamin C has antioxidant action and therefore can neutralize oxidative stress. Vitamin C reduces the tissue-damaging effects of P. gingivalis on human gingival fibroblasts. Bogdan M et al(2020) in a systemic review highlighted the positive effects of ascorbic acid on patients with periodontitis. [44]

Vitamin D insufficiency is highly prevalent and increases the risk of various diseases, including periodontitis. Vitamin D may influence tooth loss due to periodontitis via its immunomodulatory or antimicrobial effect, calcium absorption, and/or its effects on bone metabolism. Vitamin D3 is crucial in the treatment and prevention of many common conditions, such as osteoporosis, which can also cause tooth loss.[45]

Sanguinaria (bloodroot) has broad antimicrobial and anti-inflammatory activity. It has been shown to inhibit bacterial adherence, and therefore reduces plaque development. Sanguinaria-containing toothpaste and oral rinse have been shown to significantly inhibit the redevelopment of gingivitis following a chlorohexidine rinse period.[46] Gotu kola and pomegranate promote tissue healing and modulate immune responses and may be effective as an adjunctive treatment for periodontitis.[47]

Green tea was found to be effective in reducing oral bacterial count as well as for preventing plaque formation and halitosis in the study of Moghbelet al (2011).[48] Rassameemasmaunget al. (2013)found out that green tea can reduce oral malodor, plaque, and gingivitis.[49]

Nayak et al.(2010) observed that manuka honey is as effective as chlorhexidine in reducing plaque formation.[50] In 2014, Atwaet al. found out that honey can be an effective alternative for the prevention of dental caries, plaque, and gingivitis in orthodontic patients.[51] Bhattacharjee et al.(2015) and Srinagesh et al.(2012) observed that Triphala mouthwash is effective against plaque and gingivitis as well as oral streptococcal count.[52,53]

Aloe vera was proved to be an effective mouthwash for reducing plaque and gingivitis in the study of Karim et al. (2011).[54] A study by Abdulbaqi et al. in 2016 concludes that the combination of green tea and S. persica L aqueous extracts can act as a natural alternative mouthwash for controlling plaque.[55]

A study by Ahmed et al. in 2017 says that in areas where chlorhexidine is unavailable, mouth rinses with tulsi and honey can be used as an effective alternative.[56] Jalaluddin et al.(2017) discovered that neem mouthwash can be used as an alternative to chlorhexidine mouthwash for reducing plaque and gingivitis.[57]

Massage Therapy:

Massage is the manipulation of the body's soft tissues. Massage techniques are commonly applied with hands, fingers, elbows, knees, forearms, feet, or a device. The purpose of massage is generally for the treatment of body stress or pain.

Peer-reviewed medical research has shown that the benefits of massage include pain relief, reduced trait anxiety and depression, and temporarily reduced blood pressure, heart rate, and state of anxiety. Additional testing has shown an immediate increase and expedited recovery periods for muscle performance. Theories behind what massage might do include enhanced skeletal muscle regrowth and remodelling, blocking nociception (gate control theory), activating the parasympathetic nervous system, which may stimulate the release of endorphins and serotonin, preventing fibrosis or scar tissue, increasing the flow of lymph, and improving sleep.[58]

Yoga:

The practise of yoga in the Indian subcontinent was documented as early as 3000 BC. The word 'yoga' is derived Sanskrit word yuz, which is often interpreted as meaning 'to unite'. Yoga focuses on the body, breathing and mind. This is accomplished by Asanas (exercise postures), pranayama (breathing techniques) and meditation. Yoga prevents the impairment of cellular immunity seen in stress. Yoga involves mind-body relaxation techniques and cushions the changes related to stress. Since yoga involves mind-body relaxation techniques (pranayama and meditation) along with mild to moderate physical exercise (Asanas), yoga may optimize the production of pro-inflammatory cytokines. [59]

Yoga acts on Hypothalamo pituitary adrenal axis, sympathetic nervous system and vagus nerve which energises immune and endocrine response leading to a healthy Periodontium. Action on Hypothalamo pituitary adrenal axis reduces stress which collectively reduces bacterial inflammatory response.[60,61]

Katuri KK et al in 2016 performed a study to find a possible association of yoga practice and serum cortisol levels in chronic periodontitis patients with stress-related anxiety and depression. The author found individuals practicing yoga regularly had low serum cortisol levels, HAM-A scale and ZSDS scores, and better periodontal health.[2]

Conclusion:

Alternative medications, which are having many beneficial properties, are a good choice for the prevention or treatment of oral diseases without any side effects. In a developing country such as India, several people cannot even afford their daily basic expenses, and for them, these alternative medicines will be a boon. Henceforth, researchers should be encouraged to quench the demand for preventive measures and to find hidden alternative medicines and ensure their effectiveness, which can help a wide range of people. This implicates a wide scope for further researches on the same topic.

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