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Integrative Approaches to Oral Health: Revisiting Tooth Brushing, Oil Pulling, and Tissue Regeneration

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ABSTRACT

In ancient India, conditions such as oral cavity irregularities, plaque, and infections were addressed. Many chronic and infectious diseases can be treated using traditional medicine. Studies have revealed that every type of chewing stick mentioned in Ayurvedic books from antiquity contain therapeutic and anti-cariogenic qualities. About thirty systemic disorders are said to be cured by its oil pulling (Kaval, Gandush) method. Amla, also known as Emblic myrobalan, is a general oral health rebuilder. Hawthorn berries (Crateagus oxycanthus) and bilberry fruit (Vaccinium myrtillus) strengthen gum tissue by stabilizing collagen. Glycyrrhiza glabral, or liquorice root, possesses antibacterial, anti-cavity, and plaque-reducing properties. If traditional medicine is to be recognized as a component of primary health care, the use of safe, high-quality materials and procedures must be guaranteed based on the evidence that is now available. Ayurvedic dental health techniques have been scientifically validated, which could support their inclusion in contemporary dental treatment. Publicizing these methods through the media would help the general public by boosting trust in the traditional methods, which would stop tooth loss and decay.

Key Words *Kaval, Gandusha, Oral health, Traditional medicine*

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INTRODUCTION

Ayurveda is a comprehensive medical system that originated in India between 3000 and 5000 years ago. It is a historic Indian subcontinental medical system that is now in use as a type of alternative medicine in other regions of the world[1]. The Vedic age in India produced the first writings on Indian medicine. Its earliest authoritative texts are the Suśruta Samhitā and the Charaka Samhitā[2]. Ayurvedic practitioners have created numerous pharmacological formulations and surgical techniques over the centuries to address a wide range of illnesses[3]. Dentistry was part of Ayurveda's surgical system even if it was not a specialty area. Infections, plaques, and oral cavity abnormalities may all be treated and even cured in ancient India.

Traditional medicine is the culmination of all the information, abilities, and methods derived from indigenous cultural theories, beliefs, and experiences that are utilized to preserve health, as well as to avoid, identify, enhance, or manage mental and physical ailments. Complementary or alternative medicine is the phrase used to

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describe traditional medicine that has been embraced by non-indigenous communities. Herbs, herbal materials, herbal preparations, and completed herbal products with plant parts or other plant materials as active ingredients are all considered herbal medicines.

The use, safety, and efficacy of the numerous over-the-counter and conventional medications need to be well understood by the dentist. Since this area of dentistry is rarely studied, it is necessary to integrate complementary alternative medicine (CAM) systems with professional dental treatment modalities in order to offer patients the best and most distinctive aspects of each system as a complementary therapy and alternative treatment option[4]. The current scientific evidence-based assessment of the literature focuses on the potential function of Ayurveda in the treatment of various orofacial illnesses, taking into account the significance of various traditional or complementary and alternative medicine systems.

Ayurveda and Oral health

According to Ayurveda, dental health (danta swasthya in Sanskrit) is very individualized and varies according to each person's constitution (prakriti) and climatic variations brought on by solar, lunar, and planetary influences (kala-parinama). The predominance of one or more of the three doshas—vata, pitta, and kapha—determines the classification of the physical constitution. In Ayurveda, health care, including oral health, is determined by the dominant dosha in both the individual and nature[5].

CHEWING STICKS

In order to prevent illness, Ayurveda advises chewing sticks in the morning and after each meal. Ayurveda requires the usage of herbal brushes that are around nine inches long and the tiny finger's thickness. The flavors of these herb sticks should be "tikta" (bitter), "katu" (acrid), or "kashaya" (astringent). It is used by crushing one end, chewing it, and eating it slowly[6].

Chewing a medicinal stick that a Vaidya or other traditional practitioner recommends may legitimately be compared to the western-pioneered practice of "brushing the teeth," but it is not sufficiently similar to be given the same name, especially since chewed sticks are used completely differently from brushes.

Chewing sticks should be made from fresh stems of particular plants. Neem, also known as margosa or Azadiraxhta indica, is a well-known herbal chewing stick. The stems should come from a healthy tree, be supple, free of leaves and knots, and be in good condition. While some stems have an antibacterial effect, chewing on these stems is thought to cause attrition and leveling of biting surfaces, facilitate salivary secretion, and may aid in plaque control. People with vata dosha dominance are advised to use chewing sticks with bittersweet or astringent tastes, such as liquorice (Glycyrrhiza glabra) and black catechu or the cutch tree (Acacia Catechu Linn.), according to their constitution and dominant dosha[7]. Chewing sticks with a bitter flavor, such the twigs from the arjuna tree (Terminalia arjuna) and the margosa tree

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(Azadirachta indica or neem), are advised for Pitta dosha dominant people. The fever nut (Caesalipinia bonduc) and the common milkweed plant (Calotropis procera) are two examples of chewing sticks with a strong flavor that are recommended for those with the kapha dosha dominating, who are likely to have pale and thickened gums. All of the chewing sticks mentioned in the ancient Ayurvedic literature (c. 200 BC) have anti-cariogenic and therapeutic qualities, according to current research[8].

Saimbi et al. (1994) evaluated the antiplaque properties of commercial dental pastes, Ayurvedic tooth powders, and neem extract. Commercial dental pastes were ranked last, followed by neem extract[9]. In a different study, Venugopal et al. (1998) examined the caries prevalence of 2000 children in Mumbai between the ages of 1 and 14. It was discovered that youngsters using neem datun had lower rates of dental caries[10].

Mango leaves is a common tooth cleaner in southern India. After washing a fresh mango leaf, the midrib is cut off. After that, the leaf is folded lengthwise with its glossy sides facing one another. It is rolled into a pack that is cylindrical in shape. This pack is held between the thumb and the index finger, and one end is bitten off by two to three millimeters to form a raw surface that is rubbed on the teeth. The midrib, which was first removed, is used as a tongue cleanser at the conclusion.

Mango leaf's effectiveness as a dental hygiene aid was assessed by Sumant et al. (1992), who came to some intriguing conclusions[11]. The group that used mango leaf reported higher soft deposit ratings. The mango leaf-using group's caries experience was comparable to that of the toothbrush-using group. Mangiferin, a substance found in mango leaves, shown strong antibacterial activity against specific strains of Lactobacillus acidophilus, Pneumococci, Streptococci, and Staphylococci.

Islamic hygiene law includes the miswak (miswaak, siwak, sewak), a teeth-cleaning twig produced from a twig of the Salvadora persica tree, often called the arak tree or the peelu tree. Although the miswak is widely used in Muslim regions, its use predates the founding of Islam. Almas and Atassi (2002) studied how the end-surface texture of tooth brush filaments and miswak affected enamel. Twenty-one specimens were prepared; they were divided into Aquafresh toothbrush group, Miswak group and control group. The findings demonstrated that enamel tooth surface loss and abrasive active activity are significantly influenced by filament endsurface texture. When compared to the Aquafresh toothbrush, Miswak had less of an impact on enamel[12].

In a study to evaluate the antibacterial activity of miswak chewing sticks in vivo, particularly on streptococcus mutans and lactobacilli, Almas and Zeid (2004) found that miswak had an immediate antimicrobial effect in comparison to toothbrush.Lactobacilli were less vulnerable to miswak than Streptococcus mutans[13].

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In an investigation on the connection between gingival recession and chewing sticks (Miswak), Eid MA (1991) found that miswak users had noticeably more sites with gingival recession than toothbrush users. Compared to toothbrush users, miswak users saw a far more severe recession[14].

A 2003 scientific study that compared the usage of miswak with regular toothbrushes found that, as long as users were properly instructed on how to brush with the miswak, the results were unquestionably in their favor[15].

OIL PULLING

Swishing oil in the mouth for dental and systemic health benefits is known as "oil pulling" in complementary and alternative medicine (CAM). It is referred to as Kavala or Gandusha in the Ayurvedic classic Charaka Samhita and is said to treat approximately thirty systemic illnesses, including migraines, headaches, diabetes, and asthma. For many years, oil pulling has been widely used as a traditional Indian folk medicine to strengthen teeth, gums, and the jaw as well as to prevent decay, oral malodor, bleeding gums, dry throats, and cracked lips [16,17].

Sesame or sunflower oils can be used for oil pulling therapy. Because of its nutritious properties and beneficial health effects, the sesame plant (Sesamum indicum) of the Pedaliaceae family has been seen as a gift from nature to humanity. Because of its beneficial properties, sesame oil is regarded as the queen of oil seed crops [18].

When someone has a mouth ulcer, fever, indigestion, asthma, coughing, or thirst, brushing is not advised [18]. In each of these situations, oil pulling can be used to clean the oral cavity. The two main methods of oral hygiene are Gandusha and Kavala Graha, which are specialized treatments used to both prevent and treat mouth disorders. Gandusha entails entirely filling the mouth with liquid to prevent gargling. Gandush involves completely filling the mouth cavity with liquid medication, holding it there for three to five minutes, and then releasing it. In Kavala Graha, the mouth is closed for approximately three minutes while a comfortable volume of fluid is held, after which it is gargled. When used regularly, this straightforward revitalizing therapy improves the senses, preserves clarity, creates a sense of freshness, and stimulates the intellect. Bad breath, dry cheeks, dull senses, tiredness, anorexia, taste loss, eyesight impairment, sore throat, and any kapha-related imbalances can all be improved with these oral cleansing methods.

Asokan S et al. (2009) investigated the impact of oil pulling with sesame oil on plaque-induced gingivitis and compared its effectiveness with mouthwash containing chlorhexidine [19]. For this study, twenty teenage boys with plaque-induced gingivitis who were age-matched were chosen. Ten subjects each were randomly assigned to either the control or chlorhexidine group (Group II) or the study or oil pulling group (Group I). The 20 participants' plaque index and modified gingival index scores were noted, and baseline

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plaque samples were also gathered. Both the study and control groups' pre- and post-values of the plaque and modified gingival index scores decreased statistically significantly ($p < 0.001$). The plaque index, modified gingival scores, and total colony count of aerobic bacteria in the plaque of teenagers with plaque-induced gingivitis were decreased after receiving oil pulling therapy.

Oil pulling is a potent Ayurvedic detoxification method that has gained a lot of popularity recently as a complementary and alternative medicine (CAM) treatment for a variety of illnesses. Many chronic illnesses could be avoided with this approach by avoiding surgery or medication. Oil therapy is both curative and preventive. This healing method's simplicity is what makes it intriguing.Similar to reflexology and TCM, Ayurveda recommends oil gargling to purify the entire body because each part of the tongue is linked to a different organ, including the kidneys, lungs, liver, heart, small intestines, stomach, colon, and spine [18].

TISSUE REGENERATION

The well-known Rasayana herb, amla (a tree's fruit), is regarded in Ayurveda as a general oral health rebuilder. Amla is a good decoction to use as a mouthwash. For long-term benefits to the teeth and gums, capsules containing one to two grams per day can be used orally. When taken internally, herbs like amla that promote connective tissue growth and repair also help the gums. Since these tonics must permeate the entire body in order to affect the gums, their healing effects take longer to manifest. But the effects are more long-lasting.

Gum tissue is strengthened by the stabilization of collagen provided by bilberry fruit and hawthorn berries [20]. Liquorice root possesses antimicrobial properties, decreases plaque, and encourages anti-cavity action. Teeth are regarded as a component of Astidhatu in Ayurveda. Bone tissue, making their sockets resemble joints. Internal herbs that support Astidhatu, or the skeleton and joints, are beneficial for the long-term health of the teeth. Turmeric root, alfalfa leaf, cinnamon bark, and yellow dock root are notable examples.

EFFICACY & SAFETY

Many people believe that because pharmaceuticals are herbal (natural) or traditional, they are safe or do not present a risk. But if the treatment or product is of poor quality, is taken incorrectly, or is mixed with other drugs, traditional medicines and practices may result in dangerous, unpleasant reactions. More training, cooperation, and communication between traditional and alternative medicine professionals is crucial, as is raising patient awareness of safe usage.

Many metals have historically been used in Ayurvedic medicine, but only after a thorough purifying process that is scrupulously adhered to in line with genuine traditional practices.

Ayurvedic herbal medicine products (HMPs) have been linked to Lead, Mercury, and Arsenic poisoning.The incidence and concentration of

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heavy metals in Ayurvedic HMPs produced in South Asia and offered for sale in Boston-area retailers were investigated by Robert et al. They came to the conclusion that one of five Ayurvedic HMPs made in South Asia and sold in South Asian grocery stores in Boston had potentially dangerous amounts of arsenic, lead, and/or mercury. Heavy metal toxicity may be a problem for Ayurvedic medicine users, hence testing Ayurvedic HMPs for harmful heavy metals ought to be required. Harvard Medical School researchers Saper et al. have documented the heavy metal presence of Ayurvedic herbal remedies and have suggested that harmful heavy metal testing be made mandatory. The fact that there have been few reports of heavy metal poisoning after using traditional medicine is not taken into account in either paper[21]. These studies are important and vital, but they concentrate more on the flaws in mass industrial quality control. They are frequently misused to restrict the application of conventional treatment. Actually, this type of quality control failure shouldn't be seen as a general bad concept that would encourage discrimination against traditional medicine.

More generally, the question of "safe with respect to what" is fundamental when discussing the safety of herbal remedies. According to research, 51% of FDA-approved medications in the US have major side effects that were not discovered before they were approved. Every year, prescription medications cause enough harm to 1.5 million people to necessitate hospitalization. Once in the hospital, the issue can get worse. After heart disease, cancer, lung illness, and accidents, the prevalence of serious and deadly adverse drug reactions (ADRs) in US hospitals is currently regarded as the fourth to sixth most common cause of death in the US. Therefore, the hazards and safety of medical interventions are a concern in all areas of healthcare [22].

CONCLUSION

Traditional medicine should be supported and incorporated into national health systems in conjunction with national policy in nations with a tradition of using it. Traditional medicine must be recognized as a component of primary healthcare, and the use of safe, high-quality materials and procedures must be guaranteed based on the evidence that is now available. Additionally, it is necessary to improve the abilities and expertise of traditional medicine practitioners in order to guarantee patient safety. The above-mentioned scientific validations of Ayurvedic dental health practices may support their integration into contemporary dental care. Publicizing these methods through the right media would help the general public by boosting trust in traditional methods and preventing tooth loss and decay.

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