

Ayurvedic Perspectives on Oral Health: Insights into Prevention and Management of Oral Diseases

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ABSTRACT

Oral health stands as a cornerstone of overall well-being, influencing various aspects of an individual's life, from physical health to social interactions and psychological well-being. Oral diseases continue to be a major health problem world-wide. Oral health is integral to general well-being and relates to the quality-of-life that extends beyond the functions of the craniofacial complex. The standard Western medicine has had only limited success in the prevention of periodontal disease and in the treatment of a variety of oral diseases. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered to be good alternatives to synthetic chemicals. The *Global Burden of Disease Study 2017* estimated that oral diseases affect close to 3.5 billion people. The majority of oral health conditions are: dental caries, periodontal diseases, oral ulcers, oral cancers etc. There is a global need for safe and effective alternative for prevention and treatment of the oral manifestations. Ayurveda can be a good alternative for this hurdle. It provides a way of life that incorporate various diets, regimens, rasayana yogas and special procedures to maintain the oral health and hygiene. This paper, is an attempt to scientifically review various Ayurvedic drugs and techniques for the maintenance of oral health and to prevent oral diseases. The present scientific evidence based review is focused on the possible role of Ayurveda in the management of various orofacial disorders.

KEYWORDS: Oral health, Prevention, *Ayurveda*, *Gandusha*, *Dantadhavana*.

INTRODUCTION

Mouth is the window to overall health. A brighter smile reflects the physical, mental and social wellbeing. Thus, the oral hygiene is an important part of health. Oral diseases are a global public health problem, with particular concern over their rising prevalence in many low-income and middle-income countries, linked to wider social, economic, and commercial changes. Oral diseases are chronic and progressive in nature.[1] The Global Burden of Disease Study 2017 estimated that oral diseases affect close to 3.5 billion people worldwide, with caries of permanent teeth being the most common condition. Globally, it is estimated that 2.3 billion people suffer from caries of permanent teeth and more than 530 million children suffer from caries of primary teeth.[2] Severe periodontal (gum) disease, which may result in tooth loss, is also very common, with almost 10% of the global population affected. Oral cancer (cancer of the lip or mouth) is one of the three most common cancers in some countries of Asia and the Pacific. Recent studies reveal that Oral infections, especially periodontitis, are a potential contributing factor to a variety of

clinically important systemic diseases, such as cardiovascular disease, bacterial pneumonia, diabetes mellitus, and low birth weight.[3] Many of the treatment procedures for oral health conditions are expensive. Children living in poverty, socially marginalised groups and older people are the most affected, and have poor access to dental care. Most low- and middle-income countries are unable to provide services to prevent and treat oral health conditions. The main Factors contributing to oral diseases are an unhealthy diet high in sugar, use of tobacco and harmful use of alcohol. Most oral health conditions are largely preventable and can be treated in their early stages. There is a global need for safe and effective alternative for prevention and treatment of the oral manifestations. Ayurveda can be a good alternative for this hurdle. It provides a way of life that incorporate various diets, regimens, *rasayana yogas* and special procedures to maintain the oral health and hygiene.

Relevance of Ayurveda

Ayurveda is the science of life concentrates not only in the management of manifested diseases but also in maintenance of health by preventing diseases. It describes various wholesome practices and techniques to maintain the oral health and hygiene and thus prevent the oral diseases. Those practices are safe and easily accessible to all socioeconomical classes as they are relatively inexpensive. Ayurveda having strong principles of prevention that defeat the root causes of diseases. These techniques can be practiced as a part of diet and daily regimen and such tools requires no expertise or special resources. Ayurvedic principles for prevention of oral diseases can be briefed as-

- *Nidana Parivarjana* (Avoiding the causes)
- *Pathyahas* (Diet regulations)
- *Pathyaviharas* (Wholesome regimens)
- *Rasayana* (Rejuvenative drugs)

Nidana Parivarjana

Factors contributing to oral diseases are an unhealthy diet high in sugar, use of tobacco and harmful use of alcohol. Acharyas described various causative factors that leads to oral diseases. The general etiological factors are - excessive intake of meat of anupa animal eg. fish, pig, buffalo etc; tender raddish, soup of *masha*/black gram; curds, milk, *sukta*/fermented gruel, sugarcane juice, *phanita*/half cooked molasses; hard, dry, guru and *abhishyandi* food items, sleep in prone position or head low position on bed; lack of oral hygiene and avoiding beneficial therapies like brushing, fumigation, emesis, *kavala*, *gandusha*, bloodletting etc (Seasonal regimen). Also, various *Kaphakara nidanas* contribute to oral diseases.[4]

In short, diet with high salt, fat and sugar can lead to oral diseases such as mouth ulcers, dental caries, periodontitis and rarely even oral cancers. These types of food are empty calories, meaning they provide no nutrients. Tobacco use of any kind, including cigarettes, cigars, pipes, chewing tobacco, snuff etc. and alcohol use also are leading factors. Excessive sun exposure also a cause for lip and oral cancers.[5]

Avoiding such *nidanas* are very important along with proper oral hygiene and it is the first stage of prevention.

Pathyahas

Healthy and nutritious diet is very important to promote the oral health and thus to prevent oral diseases. In ayurvedic treaties wholesome diet to prevent oral diseases is described. Food processed with boiled *yava* and *trunadhanya*; soups prepared by macerating course cereals/pulses like *mudga*, *kulatha* in alkali/salty water without adding any fat and also mutton soup, *musali*, *karavelam*, *patola*, *balamoolaka*,

karpoora jala, warm water. *Tambula*, *khadira*, *ghruta*, *katu-tikta* ingredients as well as other foods and drinks which mitigate kapha. All these measures are beneficial for preventing *mukharoga*. [6]

According to American Dental Association (ADA), fiber-rich fruits and vegetables help keep the teeth and gums clean as they enhance the salivary secretion. Intake of water with permitted amount of fluoride is good for teeth as fluoride prevents tooth decay by making the enamel more resistant to the action of acids. Eggs, meat, fish and soy products are also few of the top healthy foods for healthy teeth and gums as they prevent periodontal disease and make teeth stronger.[7] Studies shows that consumption of fruits, vegetables, and cereals, which are the major source of vitamins and fiber, should be adequate in the daily diet. Optimal levels of daily allowance of micronutrients like vitamin C, E, antioxidants, zinc, beta-carotene, and folate are effective in preventing oral diseases including oral cancer.

Pathya Viharas

All *Acharyas* have given emphasis on personal hygiene which should be followed by each individual strictly. As a part of *Dinacharya* (daily regimens), various procedures for maintaining oral hygiene are well explained in all classical texts of Ayurveda. These include procedures like *Danta-dhavana* (brushing the tooth), *Jivha nirlekhana* (tongue cleaning), *Pratisarana* (Massaging the teeth and gums), *Gandoosha and Kavala* (gargling) etc.

Dantadhavana

(Brushing Teeth) Brushing of teeth helps to remove dental plaque and tartar from teeth to prevent cavities, gingivitis, and gum disease. According to Ayurvedic texts, it is recommended that *Dantadhavana* in the morning as well as after every meal prevents oral diseases. The method of use is to crush one end, chew it and brush with it slowly. It is better to take from fresh plant. The stems used for *Dantadhavana* should be healthy, soft, without leaves and knots. According to Acharya Sushruta, stick for *Dantadhavana* should be fresh and straight. Its length should be 12 Angula (9 inches), while thickness should be equal to *Kanshtika anguli* (little finger).[8] These herb sticks should be either *Kashaya* (astringent), *Katu* (pungent), or *Tikta* (bitter) in Rasa.[9] Acharya Sushruta also includes *Madhura rasa*. [10] Various recommended plants are *Neem (margosa or Azadirachta indica)*, Fresh stems of *Yastimadhu (Glycyrrhiza glabra)*, *Arjuna tree (Terminalia arjuna)*, *Vata (Ficus bengalensis)*, *Vijaysara (Pterocarpus marsupium)*, *Arka (Calotropis gigantea)*, *Khadira (Acacia catechu)*, *Karanja (Pongamia glabra)*, *Karaveera (Nerium indica)*, *Arimeda (Acacia farnesiana)*, *Apamarga (Achyranthus aspera)*, *Malathi (Jasminum grandiflorum)* or such other known herbs which possess the above mentioned tastes should be used.[11] *Acharya Susrutha* suggested that *Nimba (Azadirachta indica A.juss)* is better among bitter ones, *Khadira (Acacia catechu Linn.f)* among Astringent ones, *Karanja (Pongamia glabra Vent)* among pungent ones and *Madhuka (Bassia longifolia Koen)* among sweet ones.

The benefit of *Dantadhavana* is to get rid from bad odour of mouth along with increase interest towards food due to removal of *Mala* from tooth, tongue and mouth. Research has shown that *Dantadhavana* with sticks described in *ancient Ayurveda literature*, have medicinal properties and have the role in the maintenance of oral health. Chewing on these stems is believed to cause attrition and levelling of biting surfaces, facilitate salivary secretion and possibly help in plaque control while some stems have an anti-bacterial action.[12] Present day research has shown that all the chewing sticks described in ancient Ayurveda have medicinal and anti-cariogenic properties. Studies done on *Neem* and *Mango* leaves reveals the alkaloids and other compounds having anti-bacterial, antiplaque forming properties and also providing protection against dental caries.

Jihva Nirlekhana (Tongue Scrapping)

It is to be done after *Danta dhavana* (brushing tooth) using soft tongue scraper or massages over tongue. Tongue scrapping is done gently with a metal scrapper from root to tip. It is ideal to use gold, silver, copper, stainless steel or branches of the tree for the scrapping of the tongue. Its length should be ten fingers. Its margin should be blunt so that it will not damage the tongue and should be curved so can be use easily.[13] This stimulates the whole digestive tract and increases the *Agni* (digestive fire). It removes millions of bacterial growth (approximately 500 varieties). Clinical evidences show that use of tongue scrapers on a regular basis, has a significant improvement on eliminating anaerobic bacteria and decreases bad odour. Tongue scrapping stimulates the reflex points of the tongue, removes bad odour (halitosis), improves the sense of taste and stimulate the secretion of digestive enzyme.

Pratisarana (Massaging the Teeth and Gums)

Dantadhavana is contraindicated in pathological conditions like facial paralysis, mouth ulcers, heart diseases, some eye and ENT disorders. For these conditions Ayurveda recommends the use of soft and fine powders of drugs for cleaning the teeth and gums i.e., *Pratisarana*. It is done with paste or powder of herbs or by honey/oil with herbal powder. It can be applied with fingers and rubbed gently on teeth and gums with fine powder of *Vapya or Kushta* and three groups of three drugs - *Triphala, Trikatu and Trijata* mixed with honey. This process removes the food debris and plaque and helps to maintain the periodontal health. According to *Acharya Sushruta*, plant sticks dipped in *Madhu, Trikathu, Trivarga*, oil and *Saindhavlavana* (rock salt) can be used as tooth powder. The use of burnt rice-husk with salt for massaging teeth was very much popular in villages before. Now the same principle is seen in preparation of modern tooth pastes. Recent researches have proved gum massage is good for dental and oral hygiene as it enhances the circulation of gums and avoid stains and plaque formation. One recent study shows that turmeric extract and turmeric oil may even reverse precancerous changes in oral submucous fibrosis in humans.[14]

Kavala and Gandoosha (Gargling)

The difference between the two is only in the dosage and procedure of using the drug. In *Gandoosha*, the oral cavity is filled completely with liquid medicine, held for specific period until there is lacrimation and nasal discharge and then spit out. Normally it is about 3-5 minutes. In *Kavala*, a comfortable amount (three-fourths filled) of medicated fluid is retained with the mouth closed for a specific time (about 3 minutes), gargled and then spit out.[15] Four types of *Kavala* is mentioned in Ayurveda according to their effect as *Snaihika (lubricating effect)*, *Samana (mitigating effect)*, *Sodhana (purificatory)* and *Ropana (healing effect)*.

The benefits of regular *Gandoosha* are *Swarabalam* (strength to voice), *Hanubalam* (strength to jaws), strength to face, *Ruchyam* (better taste perception), *Drudadhantha* (strong and healthy teeth), and resistance against *Doshaja or Aaganthuja mukharogas*. [16] *Kavala and Gandoosha* (Oil pulling) help in removing the odour, stimulates the taste buds, strengthens the gums and teeth and increases the appetite.[17] It can be used to clean the oral cavity in those cases where brushing is contraindicated e.g. mouth ulcer, fever, indigestion, those who have tendency to vomit, asthma, cough, thirst.[18]

Scientific evidences show that the *Kavala and Gandoosha* with sesame oil have significant role in the maintenance of oral health. New researches have proved that the oral mucosa does not act as a semi-permeable membrane to allow toxins to pass through. The medicated oil and fluid used in *Kavala and*

Gandoosha probably protect the oral cavity from infection and inflammation by its antioxidant property. These mechanisms could be probable mode of action for the reduction of plaque scores and colony count of the microorganisms in the oral cavity. The viscosity of used medicated oil probably inhibits bacterial adhesion and plaque co-aggregation. Oil pulling therapy is very effective against plaque induced gingivitis both in the clinical and microbiological assessment. Recent Study showed that oil-pulling therapy could reduce the plaque index, modify gingival scores and the total oral bacteria count in gingivitis patients. Study on *Gandusha with Triphala* decoction shows significant result in anti-cariogenic property and reduction in gingivitis and periodontitis.

RASAYANA

Rasayana yogas are special preparations that having rejuvenating properties. Many *rasayana yogas* are described in ancient ayurvedic treaties that having action on the oral tissues and preventing diseases affecting oral cavity. Some of them are listed with indication.

- *Pippali Rasayana* (A.H.U. 39/96-97) – Galaroga, Vaiswarya
- *Harithaki Rasayana* (Cha.Chi.1/1/35) – Vaiswarya
- *Shatapaka Vacharasayana* (Su.Chi.28/7) – Galaroga, Swarabheda
- *Tilarasayana* (A.H.U.39/158) – Dantadardhyakara
- *Shivagulika* (C.D. Rasayanadhikara) – Mukharoga

Most of the *Rasayana yogas* are rich in antioxidants that reduces the oxidative damage of the tissues and promote the oral health. Such herbal preparations are helpful in improving the voice, strengthening the teeth and maintaining health of oral mucosa.

DISCUSSION

As the world is going through tough times due to the spreading pandemic, each individual should make effort to protect and promote own health. Oral health is very important as it reflects the Physical, mental and social wellness of an individual. Most of the oral diseases are preventable and easily curable at their early stages. It is the need of the hour to develop an integrated approach to preserve and promote the oral health. Prevention modalities have an equal role in fighting the emergence of diseases as that of treatment modalities. Ayurveda is not merely a system of medicine in the conventional sense to cure the diseases, but it is also a way of life that teaches to protect and promote the health. The holistic approach of this science targeted towards physical, mental and spiritual wellbeing and thus make it a great preference in life style diseases. Prevention of Diseases is possible by lifestyle regulation and adopting Ayurvedic principles in life. Ayurveda paves a path towards the health through various practices with boundless descriptions of wholesome and unwholesome diets and regimens which targets the proper functioning and nourishment of the body. Avoiding the causative factors is the first stage of prevention. Keep away from high sugar, fat and spicy foods, all sorts of tobacco and alcohol is very important to avoid oral diseases. By close examination it is clear that the diets depicted for oral health, are rich sources of anti-oxidants, vitamins and minerals that are essential for oral health. Ayurveda also recommends some daily therapeutic procedures for the prevention and maintenance of oral health such as *Dantadhavana*, *Kavala*, *Gandusha* etc. The review these practices and scientific researches indicates that Ayurveda health promotive, modalities have sound scientific base and this scientific validation could justify their incorporation into modern oral health care. Most of the oral diseases are due to the bacterial infections. Material used in daily oral health care modalities of Ayurveda including medicinal plants have antibacterial activity against

various microorganisms due to the presence of potential bioactive compounds. These helps to reduce bacterial load in the oral cavity and thus prevent the formation of plaque, dental caries, ulcers and other problems. Many Ayurvedic herbal plants also possess anti-inflammatory, analgesic, anti-ulcerative properties. Also the Rasayana yogas described here improves the oral health by reducing the oxidative damages and imparting strength to oral mucosa and teeth.

CONCLUSION

Many procedures and herbs described in Ayurveda for oral health costs little, possess therapeutic properties and are easily available to people in all socioeconomic classes. Scientific researches indicates that Ayurveda health promotive modalities have sound scientific base and their incorporation into oral health care can prevent various oral diseases. In this pandemic situation it is the responsibility of every individual to maintain own health. Imparting these simple techniques and lifestyle changes according to the principles of Ayurveda can help to promote the oral hygiene and prevent many of the oral diseases.

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