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Review Article

DINACHARYA MODALITIES - A REVIEW ON EVIDENCE BASED RESEARCH W. S. R TO ORAL HYGIENE

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ABSTARCT

Ayurveda recognizes oral cavity as one of the nine openings of physical body and also stressed that these openings are full of blemishes with their secretions throughout day and night, hence it suggests cleaning these openings frequently and regularly. Oral cavity being the chief entrance of the main gateway, as it were to the body, should be kept healthy from the attack of enemies of health. *Ayurveda* prescribes *Dinacharya* modalities like brushing the tooth (*Dantadhavana*), gargling (*Kavala and Gandoosha*) to keep up the health of the oral cavity, prevention and treatment of diseases of the oral cavity. Researchers have shown that all kinds of chewing sticks (*Dantadhavanakashta*) and gargling especially with sesame oil (oil pulling) described in *Ayurveda* texts have anti- plaque and antimicrobial activity thus promote oral hygiene. Use of safe, quality products and practice must be ensured, based on available evidence and traditional medicine has to be acknowledged as part of primary health care. It is also required to ensure patient safety by upgrading the skills and knowledge of the traditional medicine providers. Scientific validation of the *Ayurveda* oral health practices given above could justify their incorporation in to modern oral health care. Publicity of these techniques using appropriate media would benefit the general population by giving more confidence in ancient practices, thus preventing the decay and loss. The preparation of standard protocol for implementation of these modalities in the community is need of the hour.

KEY WORDS: Dinacharya, Oral health, Tooth brushing, Oil pulling.

INTRODUCTION

Ayurveda Science is one of the great legacies of Indian antiquity. Since last two decades, the interest in alternative medical system is increasing all over the world. *Ayurveda*, the way of life is getting attention not only from the common people of the country, but from the global scientific community also.

Ayurveda laid a great deal of emphasis upon the preservation and promotion of positive health, which is its primary objective, whereas prevention and cure of diseases are only secondary. For the preservation and promotion of positive health, several regimens are prescribed in *Ayurveda* which include, *Dinacharya* (daily routines), *Ratricharya* (night regimen), *Rutucharya* (seasonal regimen), *Sadvrittas* (right conduct of life), *Achara*

Rasayana (behavioral conducts). If these rules are violated, then a person suffers from various diseases.^[1]

Principles to maintain the health

Ayurveda described following Principles to preserve the health of healthy individual.

1. Daily routines (*Dinacharya*) right form rising from bed in the morning up to going to sleep at Night.^[2]
2. Night regimen (*Ratricharya*).^[3]
3. Seasonal Regimen (*Ritucharya*).^[4]
4. Right conducts of life (*Sadvrittapaalana*).^[5]
5. Non Suppressing the Natural urges (*Adharaniyavegas*) - One should not suppress the natural urges related to urine, feces, semen, flatus, vomiting, sneezing,

yawning, hunger, thirst, tears, sleep & over exertion for maintaining normal healthy life. It is necessary that these natural urges are satisfied instantaneously, i. e., as soon as they emerge. [6]

6. Suppressing the suppressible urges (*Dharaniyavegas*) - One who desires of well-being during life time and after, should suppress some urges relating to. One should refrain from expressing the urges relating to greed (*Lobha*), grief (*Soka*), fear (*Bhaya*), anger (*Krodha*), Vanity, Shameless, Jealous (*Irshya*) and malice. One should also refrain from speaking extremely harsh words, untimely words and back biting. [6]
7. Avoiding the intellectual errors- doing wrong things knowingly. [7]
8. Having good memory, knowledge of place, time and one's own capability. [7]
9. Following *Achara Rasayana* (Behavioral conduct). [8]
10. Using *Rasayana* therapy (Rejuvenation) [9]
11. Observance of regimens related to food (*Ahara*), Sleep (*Nidra*) & Celibacy (*Brahmacharya*). [10]
12. Periodic elimination of *Doshas* (physiological impurities) according to season to prevent seasonal diseases. [11]

ORAL HYGIENE

Ayurveda recognizes oral cavity as one of the nine openings of physical body and also stressed that these openings are full of impurities with their secretions though out day and night, hence *Ayurveda* suggests cleaning these openings frequently and regularly. Oral cavity being the chief entrance of the main gate way, as it were to the body, it goes without saying that it always should be kept healthy from the attack of enemies of health. Further the process of digestion begins in the mouth itself; hence one must keep the oral cavity clean and fresh. *Ayurveda* described following procedures under oral Hygiene-Brushing the teeth (*Danta dhavana*) Tongue scraping (*Jihwanirlekhana*) Gargling (*Gandusha* & *Kavala*) Chewing betel (*Tambula sevana*) and cleaning the face (*Mukha Prakshalana*) [12]

Brushing the teeth (*Danta dhavana*)

Ayurveda suggests cleaning the teeth with the help of fresh twigs of one of the plants like *Karanja* (*Pongamia glabra* Vent), *Karaveera* (*Nerium odorum* Soland), *Arka* (*Calotropis gigantea* Linn), *Malati* (*Jasminum flexile* Vahl),

Arjuna (*Terminalia arjuna* Roxb), (*Terminalia tomentosa* W&A), any other plant that possesses astringent, pungent, bitter or sweet taste [13]. *Acharya Susruta* suggested that *Nimba* (*Azadiracta 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. [14]

The fresh twigs of above trees should make into soft brush by chewing so as to avoid injury to gums [15]. Preferably the twig should be little finger thickness and 20-24cm length.

In case of non-availability of fresh twigs one can use tooth powder prepared from *Trikatu* (*ginger* + *black pepper* + *long pepper*), *Triphala* (*indian gooseberry* + *belliric myrobalan* + *chebulic myrobalan*), *Irimeda* (*Acacia farnesiana* (L) Willd), and *Saindhavalavana* (*Rock salt*) [16]. Each teeth should be separately cleaned from down to up so as to remove the bad smell and coating accumulated during the night. The phlegm on the gums should also be removed without hurting them. This helps in improving taste to food, a clean and fresh feeling in the mouth and sense of satisfaction of the mind. [17]

The ancient teeth cleaning techniques are viewed as economic, scientific and more than anything medicinally. The tooth twig is highly desirable when compared to the modern tooth brushes and pastes.

Tongue scraping (*Jihwanirlekhana*)

After cleaning the teeth one should scrap the tongue by a thin, smooth and flexible foil of gold, silver or even of wood (preferably of the plant used for twig) which should be ten *Angulas* in length (approximately 20cm in length). [18]

Scraping of the tongue gives relief and removes the bad odors of the mouth, coatings of the tongue which accumulated at the root of tongue and thus helps in proper respiration. [18]

Gargling (*Kavala* / *Gandoosha*)

After cleaning the teeth and scraping the tongue, the mouth should be gargled number of times with cold water as it helps in eliminating the *Kapha* (excessive secretions), thirst. Other uses of gargling are imparting strength to jaws and voice, healthy look of the

face, increasing appetite. It makes the teeth firm and brings a natural relish for food. [19]

Tilataila (sesame oil) or *Mustha kashayam* (decoction of *Cyperusrotunda* Linn) or *Triphala kashaya* or honey mixed with water or meat, juice or merely cold or lukewarm water for gargling are mentioned by *Acharyas*. [20]

In the condition of mouth ulcers the use of decoction made up of *Triphala* and mixed with honey is useful. In day to day practice even one can do gargle with cold water to keep oral cavity in healthy condition.

Chewing of Betel (*Tambula Charvana*) [21]

Tambula generally composed of betel leaf, betel nut powder, camphor, cloves, wet quicklime fruit of *Myristica fragrans* Houtt (*Jatiphala*) etc.

Ayurveda specially recommended *Tambula* should be taken after getting up from sleep, after dinner, after bathing and after vomiting therapy.

Tambula provides cleanliness and pleasant odor to the breath, brightness of face, purification of physiologically formed excretions in the teeth, removes coating of the tongue, aids the digestion, helps in curing the defects in voice etc.

Persons suffering from scurvy, excessive thirst and who are very lean should avoid *Tambula*.

Cleansing the face (*Mukahapraksalana*) [23]

Washing the face also helps in maintaining the oral hygiene. *Ayurveda* advocated the washing the face with cold water or warm decoction or medicated milk prepared by soaking or boiling the bark of the banyan tree (*Nyagrodha*), sapphireberry (*Lodhra-Symplocos recemosa* Roxh) Embic (*Amalaki-Emblica officinalis* Gaertn) in milk or water. The barks of these trees have best astringent and with cleansing properties. Person with delicate red skin should use medicated cold water or cold milk. Person with dry, rough skin should use warm medicated milk, having rough skin should use warm medicated milk which helps proper emulcificient effect. Persons with oily or edematous face should use warm decoction of medicines, which removes excessive oily texture of face. Cold water wash serves as a blood purifier and useful in pimples and disorder of

facial skin. Warm water wash on the other hand is smoothening and has better effect.

Scientific validation of preventive modalities is very essential for the implementation of the same in the community.

OBJECTIVE OF THE STUDY

To review the studies conducted on different *Dinacharya* modalities in promotion of oral health

METHODOLOGY OF THE STUDY

The scientific studies conducted on *Dinacharya* modalities in promotion of oral hygiene and prevention of oral diseases at different centers and overseas have been done.

REVIEW ONSCIENTIFIC RESEARCHES

Tooth cleaning (*Dantadhavana*)

Saimbi *et al* (1994) tested the anti-plaque efficacy of *Neem* extract, *Ayurveda* tooth powder and commercial tooth pastes. *Neem* extract proved to be best. In another study venugopal *et al* (1998) analyzed a total of 2000 children of age group 1-14 in Mumbai for prevalence of caries. Those children who using *Neem* for tooth cleaning were found to be less affected with dental caries. [24]

Sumanth *et al* (1992) evaluated the efficacy of mango leaf as an oral hygiene aid and obtained interesting findings. Higher soft deposit sores were reported in group that used mango leaf. Caries experience in this group using mango leaf was similar to the group that used tooth brush. Mongiferin a compound present in mango leaves had significant antibacterial property against certain strains of pneumococcal, streptococcal, and lactobacillus acidophilus. [25]

Almas and atssi (2002) conducted research to assess the efficacy of *Miswak* (*Salvodara persica* Linn.) and tooth brush filaments end -surface texture on enamel, 21 specimens were prepared, divided into aqua fresh tooth brush group, *Miswak* group and control group. Results showed that filaments end-surface texture play major role in abrasive activity and enamel tooth surface loss. *Miswak* showed lesser effect on enamel as compared to aqua fresh tooth brush. [26]

Almas and zeid (2004) in a study to assess antimicrobial activity of *Miswak* chewing stick in vivo, especially on streptococcus mutans and lactobacilli claims that *miswak* had

an immediate antimicrobial effect compared to toothbrush. Streptococcus mutans were more susceptible to *miswak* than lactobacilli. [27]

Eid MA (1991) in a study to examine relationship between chewing sticks (*miswak*) and gingival recession concluded that miswak users had significantly more sites with gingival recession than did toothbrush users. Severity of recession was significantly pronounced in *meswak* users than toothbrush. [28]

Fatemeh Ezoddini-Ardakan, Iran (2006) conducted research on efficacy of *Miswak* in preventing dental caries, investigated and compared with the efficacy of toothbrush and tooth- paste. The analytical and clinical trial method was applied for this research among high school students in the city of Yazd, Iran, 2006. 380 second year's students (190 cases and 190 controls) were examined dentally. Then the *Miswak* was distributed to the case group and required trainings were given to both groups. After one year, the process was repeated. For analyzing the data one-way variance analysis test, Kai square, Paired t-test and two variable analyses were used. In the beginning of this study, there were no significant differences between two groups (cases and controls) regarding their dental situation and the frequency of brushing their teeth (p-value = 0. 162). In addition, there were no significant differences in DMFT between the two groups. The data collected at the end of the study showed a significant increase in DMFT in the control group (p-value = 0. 000). There was 55% increase in the rate of dental caries in control group compared to case group (0. 89 before the study and 1. 38 after the study). The risk of dental caries for each tooth in control group was 9. 35 times more than case group (9. 14% and 0. 98% respectively). Dental caries rate was detected slightly less in the case group at the end of this study. This might be as a result of the antimicrobial effects of *Miswak*. A longer study with more cases is needed to prove this suggestion. [29]

Puneetgupta et al (2011), in a study to evaluate the anti-plaque efficacy of *miswak* containing dentifrice: a triple blind controlled trial reveals that *miswak* had significant effect removing the plaques. [30]

Patil et al (2010) Comparison of two commercially available toothpastes on the salivary streptococcus mutans count in urban preschool children- An vivo study was

conducted to evaluate the efficacy of two commercially available toothpastes and their effect on the salivary streptococcus mutans count level. One was a toothpaste containing Neem, with no added fluorides, and the other a fluoridated toothpaste containing 458 ppm of fluoride. [31]

The study revealed that both the toothpastes have a good antimicrobial effect on caries producing salivary streptococcus mutans bacteria. Toothpaste containing Neem as well as fluoridated toothpaste is equally efficacious.

Other studies related to herbal tooth paste are

S de Rysky et al – the effects of officinal herbs on inflammation of the gingival margin: a clinical trial with a newly formulated tooth paste [32]

Fabianaozaki et al – efficacy of a herbal toothpaste on patients with established gingivitis – a randomized controlled trial. [33]

Oil pulling / Gargling (*Kavala / Gandoosha*)

The study was conducted by Asokan et al (2010) to study the effect of oil pulling on halitosis and microorganisms causing halitosis: a randomized controlled pilot trial. They used sesame oil on halitosis and the microorganism that could be caused be responsible for it and to compare its efficacy with chlorhexidine mouthwash. The parameters were used for this study were marginal gingival index, plaque index, organoleptic breath assessment (ORG 1), self assessment breath (ORG 2) and BANA test from tongue coating samples on days 0 and 14 of the experimental period. The comparisons of the pre and post therapy values of plaque and modified gingival index score showed a statistically significant difference (P=0. 005 and 0. 007, respectively in group I and group II. There was a definite reduction in ORG 1, ORG 2, scores and BANA test score in both group I and group II.. The study concluded that oil pulling therapy has been equally effective like chlorhexidine on halitosis and organisms associated with halitosis. [34]

In an another study by same author to evaluate the effect of oil pulling with sesame oil on plaque induced gingivitis to compare its efficacy with chlorhexidine mouthwash concluded that oil pulling therapy showed a reduction in the plaque index, modified gingival scores and total count of aerobic

microorganisms in the plaque of adolescents with plaque – induced gingivitis. [35]

The study conducted by Asokan *et al* with the aim to evaluate the effect of oil pulling with sesame on the count off streptococcus mutans in plaque and saliva of children, using the Dentocult SM strip mutans test and to compare its efficacy with that of chlorhexidine mouthwash. Twenty age matched adolescent boys were selected based on information obtained questionnaire. They were divided randomly into two groups, the control or chlorhexidine group and the study group or oil pulling group, there were ten subjects in each group. Plaque and saliva samples were collected from all the 20 subjects the strips from Dentocult SM kit and, after incubation, the presence of S. mutans was evaluated using the manufacturers chart. The study group practiced with oil pulling and the control group used chlorhexidine mouthwash for 10 min every day in the morning before brushing. Samples were collected from both groups after 24h, 48h, 1 week, and 2weeks and the efficacy of oil pulling was compared with that of chlorhexidine mouthwash. The results showed that there was a reduction in the S. mutans count in the plaque and saliva samples of both the study and control groups. The reduction in the S, mutanscount in the plaque of the study group statistically significant after 1 and 2 weeks (P=0. 01 and P= 0. 008, respectively, the control group showed significant reduction at all the four time points (P= 0. 01, P=0. 04. P=0. 005 and P=0. 005, respectively, at 24 h, 48h, 1 week, and 2weeks). In the saliva samples, significant reduction in S, mutans count was seen in the control group at 48 h, 1 week and 2weeks (p=0. 002, p= 0. 02, p= 0. 008, respectively).

The study concluded that oil pulling can be used as an effective preventive adjunct in maintaining and improving oral health. [36]

Ana luzia etal, Paraiba state university, Brazil. A randomized controlled clinical trial was performed in order to evaluate the efficacy of mouth rinse with pomegranate and chamomile plant extracts against chlorhexidine 0. 12% in the gingival bleeding condition. The mouth rinses with the herbal products were effective for this case, showing thus, antimicrobial and anti-inflammatory properties similar to that of chlorhexidine 0. 12%. [37]

Sastravaha *et al* studied the effects of *Centella asiatica* Linn. (*Manduka parni*), implanted together with the herb *Punica granatum* Linn. (*Dadima*) as a biodegradable chip in the sub gingival of 15 patients. There was a significant improvement of the GI (Gingival index) score with respect to sub gingival implants when compared to controls at 3 and 6 months, while PI (Plaque index) scores were not different between the groups. *Centella asiatica* has demonstrated antibacterial activity in an in vitro model. [38]

CONCLUSION

The systematic review of above scientific researches indicates that *Ayurveda* health promotive modalities have sound scientific base. Countries with a history of traditional medicine should support and integrate traditional medicine into national health systems in combination with national policy. Use of safe, quality products and practice must be ensured, based on available evidence and traditional medicine has to be acknowledged as part of the primary health care. It is also required to ensure patient safety by upgrading the skills and knowledge of the traditional medicine providers. Scientific validation of the *Ayurveda* oral health practices mentioned above could justify their incorporation in to modern oral health care. Publicity of these techniques using appropriate media would benefit the general population by giving more confidence in the ancient practices, thus preventing the decay and loss.

The preparation of standard protocol for implementation of these modalities in the community is a need of the hour.

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