

A study to assess the effectiveness of the guava leaves mouth wash for patients with oral problem

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ABSTRACT:

Oral health is a key indicator of overall health as a "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal(gum)disease, tooth decay, tooth loss, and other disease and disorders that limits an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing.

OBJECTIVE: The aim of the study is to the effectiveness of guava leaves mouthwash for patients with oral problem.

METHODS: A quantitative experimental research design was conducted among 100 sample on oral problem. Randomized sampling technique was used. Semi structured interview method was used to collect the demographic data and the pain level was assessed by using the numerical pain scale.

RESULTS: Among 100 sample experimental group 46% had moderate level of pain and 54% had severe level of pain were as in control group 54% had moderate level of pain and 48% had severe level of pain. The study results shows significant improvement in the level of pain reduction among experimental group than the control group after the intervention at the level of $p < 0.05$ this reveals that guava leaves mouthwash was effective for oral problem in terms of reduction of symptoms and level of pain and faster reduction of oral problem.

CONCLUSION: The study proves that guava leaves mouthwash is an effective non pharmacological cost effective and easier method on treating the oral problems.

KEYWORDS: Guava leaves, Mouthwash, Oral problem, Psidium guajava.

INTRODUCTION:

Oral health is a key indicator of overall health, wellbeing and quality of life. WHO defines oral health as "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth loss, and other disease and disorder that limits an individuals capacity in biting, chewing, smiling, speaking and psychosocial wellbeing". World Health Organization (2003).¹

Guava (psidium guajava) is a plant of the family "MYRTACEAE". Guava is a small tree that can group up to 3 meters tall. The fruits, bark and leaves are used as herbal medicine. A decoction of its leaves is recognized for its effectiveness in curing several elements, including the treatment of chronic diarrhea and gastroenteritis. The most common use of the leaves for cleaning and disinfection wounds by rinsing the affected area with a decoction leaves. It can also be used as a wash for uterine and vaginal problems and is a good for ulcers. Leaf decoction may also be used as mouthwash psidium guajava has also been used for the management of various disease like toothache, sore throat, and inflamed gums².

Dental problems are never any fun, but the good news is that most of them can be easily prevented. Brushing twice a day, flossing daily, eating properly and regular dental check-ups are essential steps in preventing dental problems. Educating yourself about common dental problems and their causes can also go a long way in prevention. Here is a list of common dental problems³.

Toothache, also known as dental pain, is pain in the teeth or their supporting structures, caused by dental diseases or pain referred to the teeth by non-dental diseases. When severe it may impact sleep, eating, and other daily activities. Common causes

include inflammation of the pulp, usually in response to tooth decay, dental trauma, or other factors, dentin hypersensitivity, apical periodontitis (inflammation of the periodontal ligament and alveolar bone around the root apex), dental abscesses (localized collections of pus, alveolar osteitis ("dry socket", a possible complication of tooth extraction), acute necrotizing ulcerative gingivitis (a gum infection), temporomandibular disorder.

Pulpitis is reversible when the pain is mild to moderate and lasts for a short time after a stimulus (for instance cold); or irreversible when the pain is severe, spontaneous, and lasts a long time after a stimulus. Left untreated, pulpitis may become irreversible, then progress to pulp necrosis (death of the pulp) and apical periodontitis. Abscesses usually cause throbbing pain. The apical abscess usually occurs after pulp necrosis, the pericoronitis abscess is usually associated with acute pericoronitis of a lower wisdom tooth, and periodontal abscesses usually represent a complication of chronic periodontitis (gum disease). Less commonly, non-dental conditions can cause toothache, such as maxillary sinusitis, which can cause pain in the upper back teeth, or angina pectoris, which can cause pain in the lower teeth. Correct diagnosis can sometimes be challenging. Proper oral hygiene helps to prevent toothaches by preventing dental disease. The treatment of a toothache depends upon the exact cause, and may involve a filling, root canal treatment, extraction, drainage of pus, or other remedial action. The relief of toothache is considered one of the main responsibilities of dentists. Lewis (2014)⁵

Toothache is the most common type of pain in the mouth or face^{125–135} It is one of the most common reasons for emergency dental appointments. In 2013, 223 million cases of tooth pain occurred as a result of dental caries in permanent teeth and 53 million cases occurred in baby teeth. Historically, the demand for treatment of toothache is thought to have led to the emergence of dental surgery as the first specialty of medicine⁶.

Gingivitis is a non-destructive disease that causes inflammation of the gums. The most common form of gingivitis, and the most common form of periodontal disease overall, is in response to bacterial biofilms (also called plaque) that is attached to tooth surfaces, termed plaque-induced gingivitis. Most forms of gingivitis are plaque-induced. While some cases of gingivitis never progress to periodontitis, periodontitis is always preceded by gingivitis. Gingivitis is reversible with good oral hygiene; however, without treatment, gingivitis can progress to periodontitis, in which the inflammation of the gums results in tissue destruction and bone restoration around the teeth. Periodontitis can ultimately lead to tooth loss⁷.

Sore throat, also known as throat pain, is pain or irritation of the throat. It is usually caused by pharyngitis (inflammation of the throat) or tonsillitis (inflammation of the tonsils). It can also result from trauma. About 7.5% of people have a sore throat in any three-month period⁸.

Bad breath, also known as halitosis, is a symptom in which a noticeably unpleasant breath odor is present. It can result in anxiety among those affected. It is also associated with depression and symptoms of obsessive compulsive disorder. The concerns of bad breath may be divided into genuine and non-genuine cases. Of those who have genuine bad breath, about 85% of cases come from inside the mouth. The remaining cases are believed to be due to disorders in the nose, sinuses, throat, lungs, esophagus, or stomach. Rarely, bad breath can be due to an underlying medical condition such as liver failure or ketoacidosis. Non-genuine cases occur when someone feels they have bad breath but someone else cannot detect it.

OBJECTIVES:

- To assess the pretest and posttest level of guava leaves mouthwash for patients with oral problem.
- To determine the effectiveness of guava leaves mouthwash for patients with oral problems.
- To associate the demographic variables with post test level of guava leaves mouthwash for patients with oral problem.

MATERIAL AND METHODS:

A sample of 100 samples on oral problem which includes pregnant women. Sample are selected by randomized sampling technique. The experimental study was conducted during one week period. Data collected was conducted in alappakkam Chennai

after getting permission from the panchayat board officer. Demographic variables consists of age, sex, education, occupation, type of family, income, marital status, food habits, personal habits, duration of personal habits is a questionnaire which contains set of questions alongside a body map drawing indicating the prevalence of oral problem.

The investigator had obtained formal permission from panchayat officer. The pain was assessed using numerical rating scale on baseline and after that the intervention of the guava mouthwash solution to gargle for 3 minutes using watch or clock thrice a day for one week. where as the control group received NSS mouthwash solution to gargle for 3 minutes using watch or clock thrice a day for one week. Descriptive statistics and inferential statistics were used to analyses the data and to test the hypothesis.

Chi-square test was used to test the association between categorical variables $P < 0.05$ was taken as statistically significant.

RESULT:

Out of 100 samples in pretest the experimental group 0(0%) have mild pain, 23(46%) have moderate pain, 27(54%) have severe pain. In control group 0(0%) have mild pain, 31(62%) have moderate pain. 19(38%) have severe pain. In control group 47(94%) have mild pain, 3(6%) have moderate pain, 0(0%) have severe pain. The calculate 't' value for experimental group was $t = 7.63$ which is found significant at $P < 0.05$ level. Then the calculated 't' value for control group was $t = 3.8$ which is found significant at $P < 0.05$ level, but less significant than experimental group. So the guava leaves mouthwash is effective on reduction of oral problem

TABLE-1: Frequency and percentage of sample characteristics in experimental and control group.

S.no.	Demographic variables	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1.	Age in years				
	a. below 30 years	13	26%	13	26%
	b. 31-40 years	12	24%	15	30%
	c. 41-50 years	15	30%	15	30%
	d. above 50 years	10	20%	7	14%
2.	Sex				
	a. male	24	48%	22	44%
	b. female	26	52%	28	56%
3.	Education				
	a. SSLC	14	28%	16	32%
	b. HSC	10	20%	12	24%
	c. Degree	7	14%	11	22%
	d. Unedulation	19	38%	11	22%
4.	Occupation				
	a. private	10	20%	15	30%
	b. government	6	12%	7	14%
	c. self-business	20	40%	13	26%
	d. unemployed	14	28%	15	30%

5.	Type of family				
	a. joint family	18	36%	32	64%
	b. nuclear family	32	64%	18	36%
6.	Income				
	a. below 5000	10	20%	15	30%
	b.5000-7000	17	34%	17	34%
	c. above 10000	15	30%	12	24%
		8	16%	6	12%
7.	Marital status				
	a. married	25	50%	23	46%
	b. single	12	24%	10	20%
	c. divorced	5	10%	9	18%
	d. widow	8	16%	8	16%
8.	Food habits				
	a. vegetarian	11	22%	23	46%
	b. non-vegetarian	39	78%	27	54%
9.	Personal habits				
	a. alcohol	7	14%	8	16%
	b. smoking	12	24%	10	20%
	c. tobacco use	2	4%	3	9%
	d. none of the above	29	58%	29	58%
10.	Duration of personal habits				
	a.1-2 years	5	10%	11	22%
	b.3-6 years	8	16%	5	10%
	c.6-10years	5	10%	8	16%
	d. none of the above	32	64%	26	52%

TABLE-1The above table reveals that out 50 among experimental group 13(26%) belongs to the age group of below 30 years 12(24%) belongs to the age group of 31-40 years 15 (30%) belongs to the age group of 41-50 years 10(20%) belongs to the age group of above 50 years . Regarding sex24(48%) belongs to male and 26(52%) belongs to female. Regarding education 14(28%) belongs to SSLC, 10(20%) belongs to HSC,7(14%) belongs to degree, 19(38%) belongs to uneducated. Regarding occupation 10(20%) belongs to private,6 12(%) belongs to government, 20(40) belongs to self-business, 14(28%) belongs to unemployed. Regarding type of family 18(36%) belongs to joint family, 32(64%) belongs to nuclear family. Regarding income 10(20%) belongs to below 5000, 17(34%) belongs to 5000-7000, 15(30%) belongs to 8000-10000, 8(16%) belongs to above 10000. Regarding marital status 25(50%) belongs to married, 12(24%) belongs to single, 5(10%) belongs to divorced, 8(16%) belongs to widow. Regarding food habits 11(22%) belongs to vegetarian, 39(78%) belongs to non vegetarian. Regarding personal habits 7(14%) belongs to alcohol, 12(24%) belongs to smoking, 2(4%) belongs to tobacco use, 29(58%) belongs to none of the above. Regarding duration of personal habits 5(10%) belongs to 1-2 years, 8(16%) belongs to 3-6 year, 5(10%) belongs to 6-10 years, 32(64%) belongs to none of the above.

The above table reveals that out 50 among control group 13(26%) belongs to the age group of below 30 years 15(30%), belongs to the age group of 31-40 years, belongs to the age group of 41-50 years, 15(30%) belongs to the age group of above 50 years 7(14%). Regarding sex 22(44%) belongs to male and 28(56%) belongs to female. Regarding education 16(32%) belongs to SSLC, 12(24%) belongs to HSC, 11(22%) belongs to degree, 11(22%) belongs to uneducated. Regarding occupation 15(30%) belongs to private, 7(14%) belongs to government, 13(26%) belongs to self-business, 15(30%) belongs to unemployed. Regarding type of family 32(64%) belongs to joint family, 18(34%) belongs to nuclear family. Regarding income 15(30%) belongs to below 5000, 17(34%) belongs to 5000-7000, 12(24%) belongs to 8000-10000, 6(12%) belongs to above 10000. Regarding marital status 23(46%) belongs to married, 10(20%) belongs to single, 9(18%) belongs to divorced, 8(16%) belongs to widow. Regarding food habits 23(46%) belongs to vegetarian, 27(54%) belongs to non vegetarian. Regarding personal habits 8(16%) belongs to alcohol, 10(20%) belongs to smoking, 3(9%) belongs to tobacco use, 29(58%) belongs to none of the above. Regarding duration of personal habits 11(22%) belongs to 1-2 years, 5(10%) belongs to 3-6 years, 8(16%) belongs to 6-10 years, 26(52%) belongs to none of the above.

FIGURE 1: Frequency and percentage of demographic variables among experimental and control group

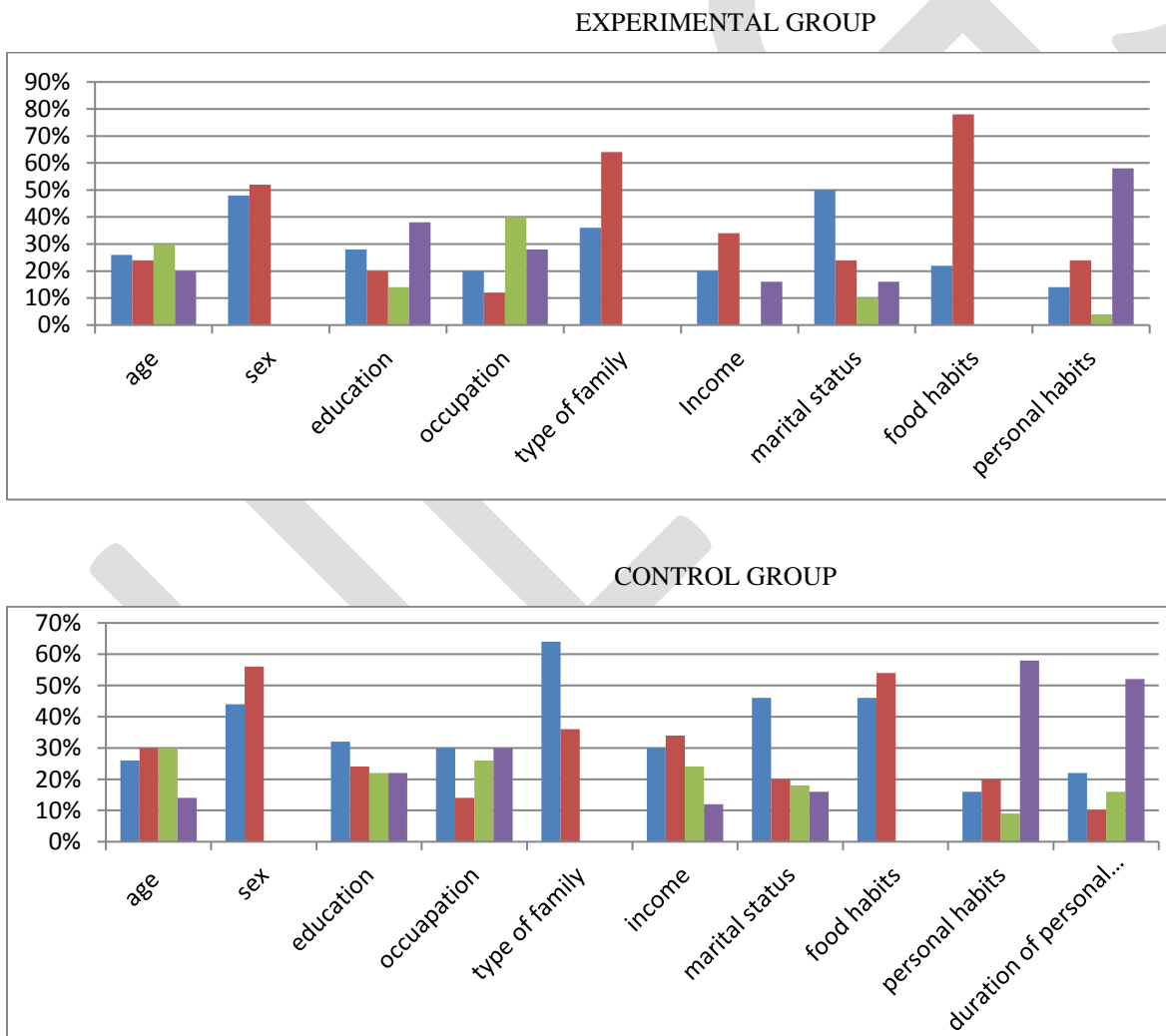
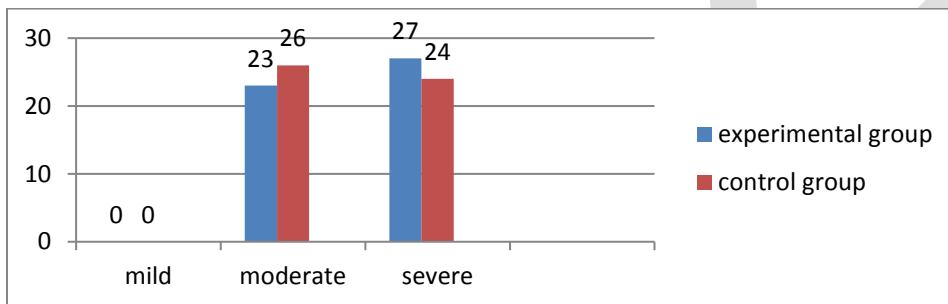


TABLE-II Frequency and percentage of pre-test level of pain among experimental and control group.

Level of knowledge	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Mild	0	0%	0	0%
Moderate	23	46%	26	52%
Severe	27	54%	24	48%

The above table reveals that out of 50 sample among experimental group 0(0%) had mild pain, 23(46%) had moderate pain and 27(54%) had severe pain. In control group out of 50 sample 0(0%) had mild pain, 26(52%) had moderate pain and 24(48%) had severe pain.

FIGURE II: Frequency and percentage of pretest level of pain among experimental and control group.



The above figure reveals that out of 50 sample among experimental group 0(0%) had mild pain, 23(46%) had moderate pain and 27(54%) had severe pain. In control group out of 50 sample 0(0%) had mild pain, 26(52%) had moderate pain and 24(48%) had severe pain.

DISCUSSION:

The main focus of this study was to assess the effectiveness of guava leaves as mouthwash for patient with oral problem. 100 samples were collected with randomized sampling technique, out of them 50 for experimental group and 50 for control group. The study finding was discussed based on the objectives.

The first objectives was to assess the pre test and post test level of guava leaves mouthwash for patients with oral problem. Pretest reveals that out of 100 samples in pretest the experimental group 0(0%) had mild pain, 23(46%) had moderate pain, 27(54%) had severe pain. Control group 0(0%) had mild pain, 26(52%) had moderate pain, 24(48%) had severe pain. Post test reveals that out of 100 samples in post test the experimental group 0(0%) had mild pain, 31(62%) had moderate pain, 19(38%) had severe pain. Control group 47(94%) had mild pain, 3(6%) had moderate pain, 0(0%) had severe pain.

Which is similar findings by Iwu (2018) tested the extract of Psidium guajava showed in vitro antimicrobial activity against Escherichia coli, Salmonella typhi, Staphylococcus aureus, Proteus mirabilis, and Shigella dysenteria. Vieira et al. (2001) have reported the antibacterial effect of guava leaves extracts and found that they inhibited the growth of the Staphylococcus aureus. The

methanolic plant leaf extracts of *Psidium guajava* and barks of this plant have antimicrobial activity. The organism inhibited was *Salmonella* species, *Bacillus* species, and the concentrations vary according to the organisms¹.

The second objectives was to determine the effectiveness of guava leaves as mouthwash for patients with oral problem. reveals that the calculated 't' value for experimental group was $t=7.63$ which is found significant at $P<0.005$ level. The calculated 't' value for control group was $t=3.8$ which is found significant at $P<0.005$ level. So the guava leaves mouthwash is effective on reduction of oral problem.

Another similar study by Thomas et al., (2017) conducted a study on "oral and dental health care practices in pregnant women in Australia". Of the 445 women enrolled in the survey, 388 (87%) completed the questionnaire. Most women demonstrated reasonable knowledge about dental health. There was a significant association between dental knowledge and practices with both education and socio-economic status. Women with less education and lower socio-economic status were more likely to be at higher risk of poor periodontal health compared with women with higher levels of education and higher socio economic status. Most women were knowledgeable about oral and dental health¹¹.

The third objective was to associate the demographic variables with post test level of guava leaves as mouthwash for patients with oral problem. reveals that χ^2 value for demographic variables is significant at $P<0.005$.

Another similar study by Grover et.,al. (2017) conducted a study on the effect of *Psidium guajava* bark, leaves and fruit as anti-diabetic agent. Evaluated some medicinal plants of India for anti-diabetic potential. They assessed some medicinal plants and *Psidium guajava* is one among those which has anti-diabetic activity. They administered the aqueous extract of leaves of 1gm/Kg for 30 days. It showed a significant reduction in blood glucose, urea, body weight, liver glycogen and serum cholesterol. These were estimated in alloxan induced experimental rats and they were contrasted with control and also with insulin management.¹²

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