Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 91.86

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Salt water rinse and chlorhexidine against oral microbes

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ABSTRACT:
Background: Dental caries is the most prevalent oral disease affecting 70%–95% of school aged children. The present study was conducted to compare salt water rinse and chlorhexidine against oral microbes. **Materials & Methods:** 40 subjects were divided into 2 groups of 10 each. Group I was salt water rinseand group II was chlorhexidine rinse. Baseline DMFS, defs and plaque scores were recorded. The minimum inhibitory concentration (MIC) of salt water against S. mutans, L. Acidophilus and A. Actinomycetemcomitans was assessed by Macrobrothdilution method. **Results:** The mean Defs in group I was 1.48 and in group II was 2.31. The mean DMFS in group I was 6.51 and in group II was 5.72. The difference was significant (P< 0.05). The mean plaque score at baseline, pre- rinse and post- rinse was 2.5 and 2.6, 1.6 and 1.5 and 0.9 and 0.8 in group I and II respectively. S. mutans(10^4 CFU/ml of saliva) count was 9.3 and 8.7, 5.4 and 6.0 and 4.6 and 4.6 in group I and II respectively. L. acidophilus(10^4 CFU/ml of saliva) count was 9.1 and 8.4, 5.4 and 6.0 and 4.8 and 4.3 in group I and II respectively. A. Actinomycetemcomitans(10^4 CFU/ml of saliva) count was 1.7 and 1.4, 1.1 and 1.0 and 0.9 and 0.8 in group I and II respectively. **Conclusion:** Salt water rinse can be used as an adjunct to mechanical plaque control for prevention of dental diseases.
Key words: Acidophilus, Dental caries, Salt water rinse

Received: 19 February, 2022 Accepted: 24 March, 2022

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This article may be cited as: Sharma C, Khajuria RR, Singh R. Salt water rinse and chlorhexidine against oral microbes. J Adv Med Dent Scie Res 2022;10(4):65-68.

INTRODUCTION

About 60%–90% of schoolchildren have dental cavities, often lead to pain and discomfort. Dental caries is the most prevalent oral disease affecting 70%–95% of school-aged children and the vast majority of adults with mean decayed, missing, and filled teeth. The overall prevalence of dental caries among 12–15-year-old children range from 40% to 80% across various regions in India; the overall impression is that prevalence of dental caries has increased in India.

One of the effective methodsfor reducing the number of microorganisms in the mouth is to employ antiseptic solutions, used as mouthwashes, often accompanied by other hygiene instructions and sometimes on their own, prior to surgery and in some cases even after surgery and during the wound-healing period. The affordability for daily usage of mouth rinses when it comes to a country like India is low. Mouth rinse that is natural, safe, cost effective, readily available, and culturally acceptable is essential for oral health promotion in India. Thus, the present study is planned to verify if salt water (laboratory graded) rinse is effective in reducing oral diseasecausing microbial count. Chlorhexidine mouth rinse is the most commonly used anti plaque agent.The present study was conducted to compare salt water rinse and chlorhexidine against oral microbes.

MATERIALS & METHODS

In this in-vivo study, the minimum inhibitory concentration (MIC) of salt water against S. mutans, L. Acidophilus and A. Actinomycetemcomitans was assessed by Macrobrothdilution method.

40 subjects were divided into 2 groups of 10 each. Group I was salt water rinseand group II was chlorhexidine rinse. Baseline DMFS, defs and plaque scores were recorded. Baseline unstimulated saliva samples were collected by spitting method. Oral

prophylaxis was done after baseline sample collection. The participants were advised to rinse the allocated mouthrinse for 5 days. Pre- rinse and post – rinse plaque examination and salivary microbial analysis was done. The collected salivary samples were immediately transported and streaked on the respective media for microbial count.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Assessment of dental caries in both groups

Dental caries	Group I	Group II
Defs	1.48	2.31
DMFS	6.51	5.72

Table I, graph I shows that mean Defs in group I was 1.48 and in group II was 2.31. The mean DMFS in group I was 6.51 and in group II was 5.72. The difference was significant (P< 0.05).

Graph I Assessment of dental caries in both groups

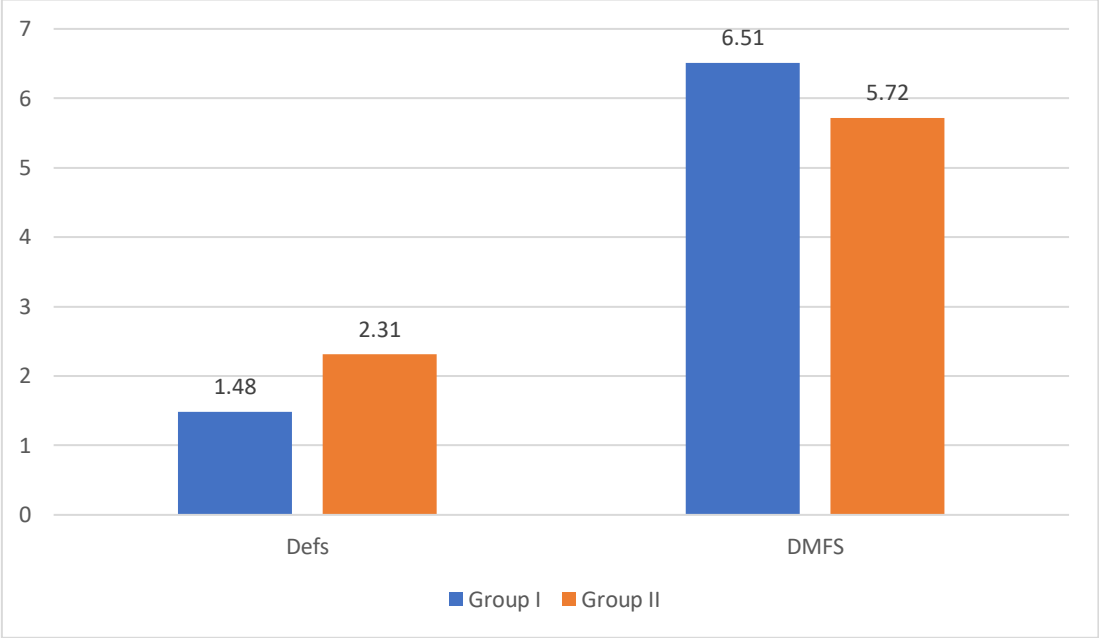
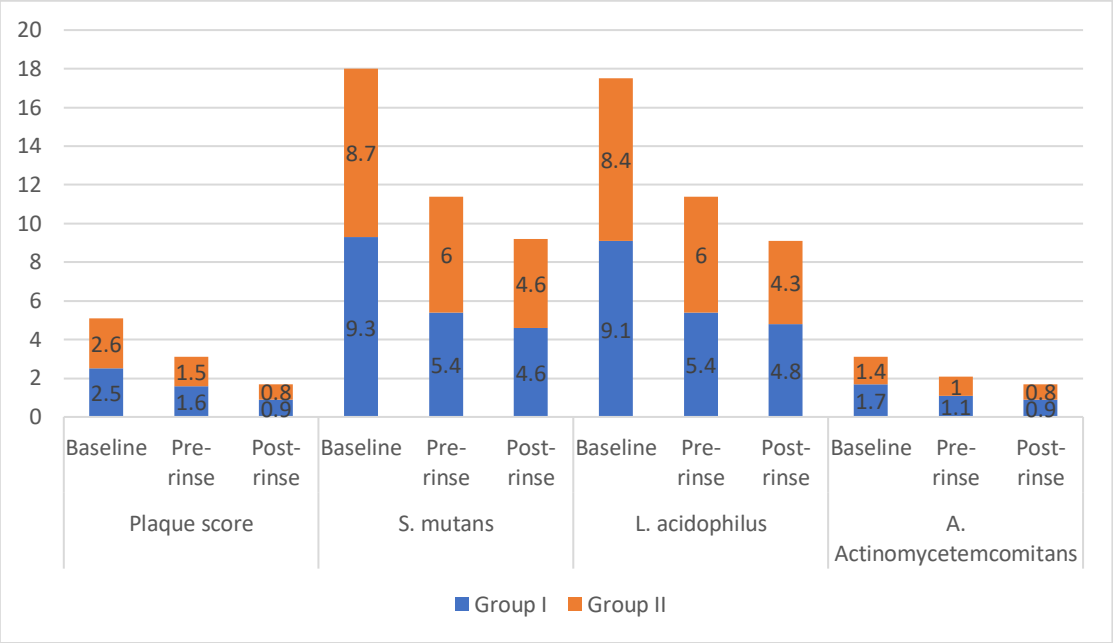


Table II Comparison of plaque scores and salivary microbial count

Parameters	Duration	Group I	Group II	P value
Plaque score	Baseline	2.5	2.6	0.12
	Pre- rinse	1.6	1.5	
	Post- rinse	0.9	0.8	
S. mutans	Baseline	9.3	8.7	0.05
	Pre- rinse	5.4	6.0	
	Post- rinse	4.6	4.6	
L. acidophilus	Baseline	9.1	8.4	0.04
	Pre- rinse	5.4	6.0	
	Post- rinse	4.8	4.3	
A. Actinomycetemcomitans	Baseline	1.7	1.4	0.17
	Pre- rinse	1.1	1.0	
	Post- rinse	0.9	0.8	

Table II, graph I shows that mean plaque score at baseline, pre- rinse and post- rinsewas 2.5 and 2.6, 1.6 and 1.5 and 0.9 and 0.8 in group I and II respectively. S. mutans(10^4 CFU/ml of saliva)count was 9.3 and 8.7, 5.4 and 6.0 and 4.6 and 4.6in group I and II respectively.L. acidophilus(10^4 CFU/ml of saliva)count was 9.1 and 8.4, 5.4 and 6.0 and 4.8 and 4.3in group I and II respectively.A. Actinomycetemcomitans(10^4 CFU/ml of saliva) count was 1.7 and 1.4, 1.1 and 1.0 and 0.9 and 0.8in group I and II respectively.

Graph I Comparison of plaque scores and salivary microbial count



DISCUSSION

Oral diseases such as tooth decay, gum disease, and tooth loss may significantly affect a person's overall health. Some types of oral microorganisms play an important role in pathogenesis infectious diseases of the mouth, jaw, and face, and are even involved in the generation of various infections in other parts of the body. Hence, the reduction of microorganisms in the mouth prior to oral surgery or maxillofacial surgery, which are performed through the mouth, can play an important role in reducing the occurrence of infections after surgery.The salivary microbial species reflect the oral microbial community composition and could serve as a biomarker of the health and disease status of the oral cavity. Saliva allows dental plaque to flourish and also detaches layers of plaque. Saliva could act as an oral circulating fluid for bacterial transmission and act as a reservoir for bacterial colonization. Bacteria can survive in saliva and utilize salivary constituents for growth. The levels of cariogenic species in saliva have been investigated as a potential tool for caries risk assessment.The present study was conducted to compare salt water rinse and chlorhexidine against oral microbes.

We found that mean Defs in group I was 1.48 and in group II was 2.31. The mean DMFS in group I was 6.51 and in group II was 5.72.Aravinth V et al compared the effectiveness of salt water rinse with chlorhexidine mouth rinse in reducing dental plaque and oral microbial count. MIC of salt water was 0.7 M for S. mutans, A. actinomycetemcomitans and P. gingivalis and 0.8M for L. acidophilus. There was statistically significant reduction in the plaque scores, salivary S. mutans, L. acidophilus, A. actinomycetemcomitans and P. gingivalis count from baseline, pre-rinse to post-rinse in the study group (p=0.001) and control group (p=0.001). Salt water was as effective as chlorhexidine in reducing dental plaque (p = 0.19) and A. actinomycetemcomitans (p = 0.35) count and while chlorhexidine was superior against S. mutans (p = 0.001), L. acidophilus (p = 0.001) and P. gingivalis(p = 0.001).

We found that mean plaque score at baseline, pre-rinse and post- rinse was 2.5 and 2.6, 1.6 and 1.5 and 0.9 and 0.8 in group I and II respectively. S. mutans(10^4 CFU/ml of saliva) count was 9.3and 8.7, 5.4 and 6.0 and 4.6 and 4.6 in group I and II respectively. L. acidophilus(10^4 CFU/ml of saliva) count was 9.1 and 8.4, 5.4 and 6.0 and 4.8 and 4.3 in group I and II respectively. A. Actinomycetemcomitans(10^4 CFU/ml of saliva) count was 1.7 and 1.4, 1.1 and 1.0 and 0.9 and 0.8 in group I and II respectively.Bahlouli et al evaluated the antibacterial effects of chlorhexidine mouthwashes with and without alcohol on common oral bacteria. In this in vitro study, bacterial species were purchased from a research center and were cultured separately in proprietary environments in test tubes. Thereafter, mouthwashes with alcohol, without alcohol, and with salt water (saline) were added to test tubes containing the bacteria grown. The obtained results showed that the saline group had the highest antibacterial activity and that the average antibacterial activity of the alcohol and alcohol-free groups did not differ significantly (P > 0.05). Post hoc test results showed that the antibacterial activity of the saline group was significantly different statistically from that of the other two groups.

A study conducted by Gupta et al. which evaluated the effect of aloe vera mouthwash with chlorhexidineand saline as the placebo on dental plaque, concluded that saline rinse was not as effective as aloe vera and chlorhexidine.

CONCLUSION

Authors found that salt water rinse can be used as an adjunct to mechanical plaque control for prevention of dental diseases.

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