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Research Article

MOUTH WASH: A SURVEY ON UTILITY, PERCEPTION AND AWARENESS AMONG PHYSICIANS TREATING HEAD NECK CANCER

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ABSTRACT

Background: Various mouthwashes are used by specialists to reduce the side effects of anticancer therapies. At present, there is no gold standard available for the prevention and treatment of oral effects. In clinical practice, diversity exists in different treatment strategies used and their way of use.

Aim: To get an understanding of various prescriptions given by various specialists treating cancer patients in Tertiary cancer hospital

Materials and Methods: A questionnaire was formulated by two experts on the prescription and method of use of mouthwashes. Ethical committee approval was obtained. Survey questionnaire included : type of mouthwash prescribed, objective for use : primary objective behind its prescription, method of use, efficacy, adverse effects, awareness of evidence base. Data obtained was statistically analysed and results were obtained.

Statistical Analysis: Data obtained was statistically analysed using SPSS software version 16.0

Results: Lot of variations exist in the type of mouthwashes prescribed, there way of use, duration and efficacy perceived by various practitioners.

Conclusion: There is an urgent need of extensive research for the standardization of mouthwash prescriptions and clinical trials for the rationale of use of various mouthwashes. Evidence basis must be provided to the specialists for the better palliative care of the patients with oral mucositis. Also collaboration with a multidisciplinary team should be included in all phases of treatment for the better management of all the symptoms.

Keywords: Oral Mucositis, Mouthwash, Mucositis Treatment, Mucositis Awareness.

INTRODUCTION

Radiotherapy (RT) alone or concurrent chemoradiotherapy (CCRT) has been a standard treatment for head-and-neck cancer (HNC) in the adjuvant or definitive setting. However, approximately 80–100% of patients with HNC that receive standard RT or CCRT develop oral mucositis (OM)². With increasing radiotherapy dose to achieve tumor control, the incidence of acute OM increases. OM is a distressing, and sometimes serious, consequence of treatment with an incidence ranging from 15% to 90%.³ This adverse effect mandates placement of feeding tube, or hospitalization of some patients and leads to treatment gaps, These factors effect negative impact on the quality of life and can greatly limit the success of antineoplastic therapy by reducing the tolerance to

optimal tumoricidal treatment² or by simply prolonging the overall treatment time.

The research and evidence regarding mucositis, during radical treatment of head and neck cancers, its prevention and treatment is limited. Multiple agents have been tested and reported to be useful for different parameters like delay in onset, decrease pain, lesser grade of mucositis etc. However there have been some lacunae in the literature: a) Deficiency of a central database for mucositis⁵. b) Lack of evidence based conclusive findings regarding the prevention and treatment of mucositis¹. c) Absence of a standard objective mucositis assessment tool which has made comparative studies difficult⁵. d) the aims of all the studies have been different hence it is difficult to homogenize and reach practical conclusions from them. Common thread among most studies

is the maintenance of oral hygiene and use of mouthwashes which serve as a topical therapy for the prevention as well as management therapy for these patients. Though large array of mouthwashes have been used, at present, there is no gold standard available for the prevention and treatment of oral mucositis. Though there are various guidelines^{8,9,10} provided for the management of mucositis, there is no uniformity and evidences are still insufficient. In clinical practice there exists a diversity in different treatment strategies⁶. With this background authors felt the need to assess the awareness of the practicing oncologist regarding the uses and effectiveness of mouthwash.

AIM

An attempt was made to gain an insight into the prescriptions of mouthwashes prescribed by various specialists treating cancer patients in a tertiary cancer hospital and efficacy of these agents as experienced by specialists.

METHODOLOGY

A questionnaire was formulated on the indications, prescription and method of use and duration of use mouthwashes including the knowledge of any supporting evidence. Ethical committee approval was obtained from hospital ethical committee. Survey questionnaire was piloted in about 10 oncology experts and changes were made

accordingly. The survey questionnaire included 26 questions regarding the number of HNF cancer patients seen daily by a practitioner, type of mouthwash prescribed, objective for use, method of use, frequency, efficacy, adverse effects, efficacy as perceived by these specialists and awareness of evidence base. (Appendix 1: The Questionnaire) This was circulated among various specialists in the tertiary cancer referral centre. These practitioners were specialists dealing with cancer patients on regular basis providing chemotherapy, radiotherapy or dental care of cancer patients and included Dentists, Medical oncologists, Radiation Oncologists and Surgical Oncologists.

A total 50 forms were distributed. Findings of these questionnaires were tabulated and statistically analysed using SPSS software (version 16.0).

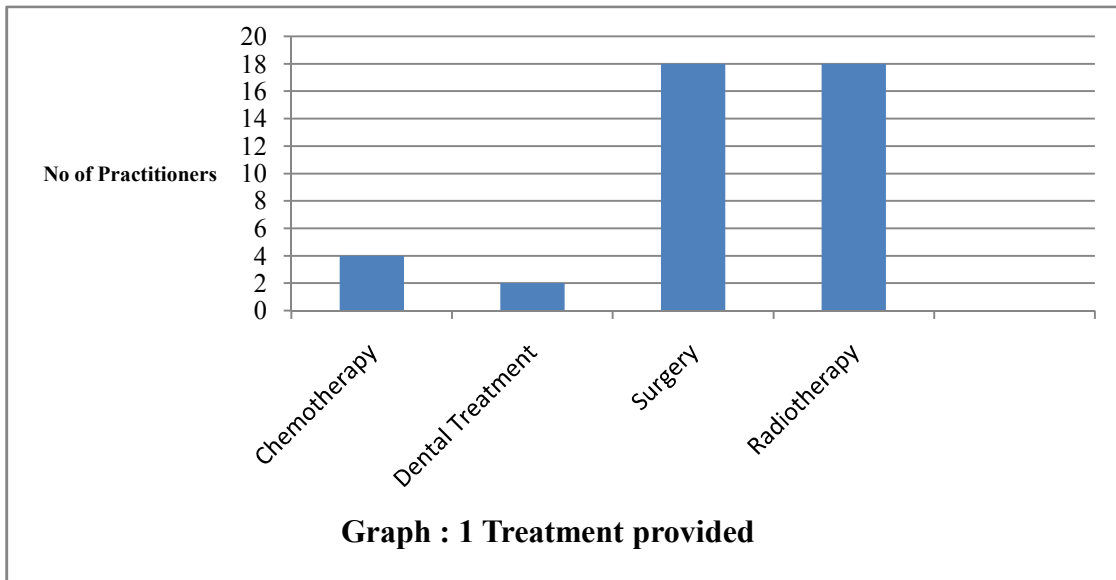
STATISTICAL ANALYSIS

Data obtained was statistically analysed using SPSS software version 16.0

RESULTS

Total 50 questionnaires were distributed, out of which 42 were returned.

Out of 42 practitioners 4 were the specialists providing chemotherapy to patients, 2 were dentists, 18 were radiation oncologists and 18 were to the head and neck onco-surgeons.



Majority of specialists were examining about 100-150 patients with HN cancer each month. As given in Table 1. However

about 9 specialists were examining more than 250 patients of HN cancer per month.

No. Patients seen per month	No of Specialists
<50	2
50-100	7
100-150	16
>150	17
Total	42

Out of 42 practitioners 39 were prescribing mouthwashes to the patients and 3 were not prescribing any mouthwash to these patients. Answers of those 3 practitioners who were not prescribing mouthwashes were not included in the further analysis of this questionnaire.

For the further analysis regarding mouthwashes 39 replies will be considered.

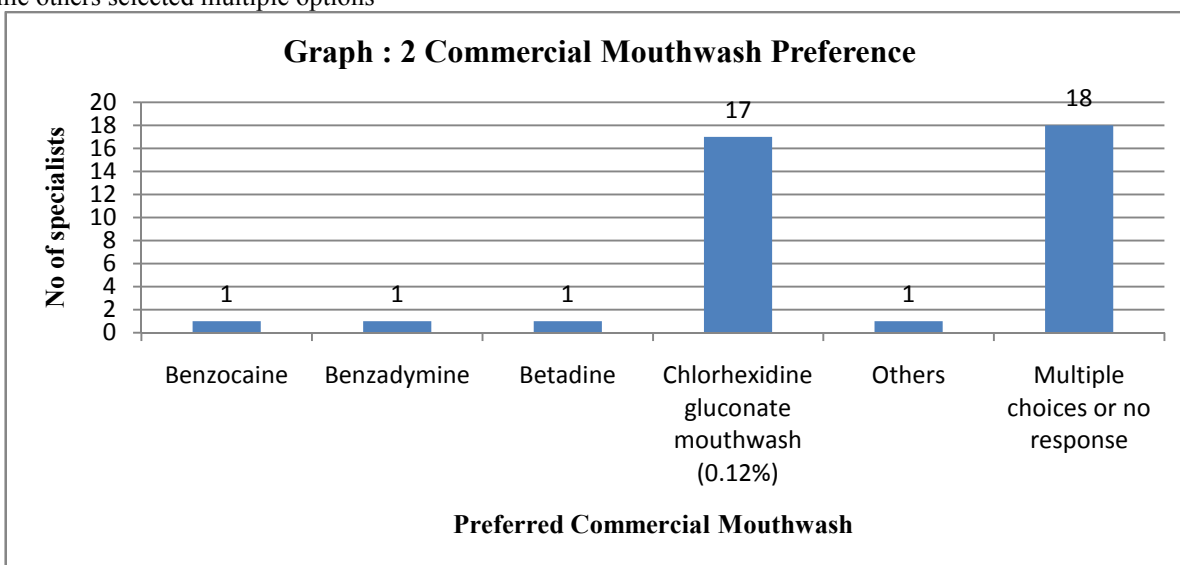
Practitioners prescribed mouthwashes with multiple objectives like analgesic, antibiotic, healing of ulcer, oral hygiene, periodontitis, prevention of acute mucositis and late toxicities caries and xerostomia.

Various specialists were prescribing mouthwashes at various phases of treatment. Most of them preferred using during treatment while others selected multiple options

Out of these 39 specialists, 11 specialists preferred homemade preparations of mouthwashes, 8 preferred commercial while 20 preferred both homemade as well as commercial preparations.

For ingredients of homemade mouthwashes 22 opted for both common salt and sodium bicarbonate while 6 selected common salt and 5 opted for sodium bicarbonate. However preparation methodology regarding the amount of main ingredients used, quantity and temperature of water varied greatly.

Various commercially prepared mouthwashes as prescribed by these specialists is given in the graph 2.



However in when multiple options were selected choices they are shown in Table 2

Mouthwash Selected	No Of Specialists
Benzocaine and H2O2	1
Benzocaine And Magic mouthwash	1
Betadine and Chlorhexidine	2
Betadine, chlorhexidine, H2O2	3
Betadine , H2O2	2
Chlorhexidine , H2O2	6
Chlorhexidine, H2O2, Magic mouthwash	1
Total	16

Thus data shows, most of the specialists prescribe chlorhexidine gluconate mouthwash alone or in combination with other mouthwash followed by betadine.

When asked for the technique of using mouthwashes, 32 specialists thought there is difference between gargle, rinse and swish while 7 think there is no difference between these methods.

18 specialist's advice gargle, 9 advice rinse, 4 specialists advice swish, 7 advice gargle and rinse while all methods are advised by 1 specialist.

17 specialists advice to use mouthwash thrice a day while 22 specialists suggested more than thrice or as per needed.

The time duration for performing mouthwash varied with 17 specialists suggesting mouthwash to should be retained in mouth for 30 sec, 13 feel it should be retained in mouth for 1minute, 4 feel it to be retained for 2 minutes, 4 feel it to be retained for 5 mins while 1 specialist selected as 30-60 sec.

For duration of use ,9 specialists think that mouthwash should be used for 1 month or less, 4 think it to be used for 6 months, 4 think for >6 months, 13 think it to be used till symptoms subside while 9 selected other option. These other options

included lifelong, depending upon the type of mouthwash used,etc

11 specialists think chlorhexidine to be most effective mouthwash, while 15 specialists think homemade mouthwashes to be most effective, and however 4 specialists

feel betadine to be most effective alone or in combination with others.

For the various objectives achieved, responses obtained are summarized in table 3.

Table 3: Various Objectives Achieved, Responses Obtained

Objective for using mouthwash	No of specialists giving response				
	<25%	25-50%	50-75%	75-100%	NA or missing
Analgesia	12	6	8	1	12
Antibiotic	7	11	9	1	12
Healing of ulcer	9	8	8	2	12
Oral Hygiene	3	3	19	13	1
Xerostomia	12	11	1	2	13

Out of all 39 specialists 20 were aware of adverse effects of mouthwashes while 28 were not aware of any adverse effect. However out of all the specialists 9 had observed adverse effects of mouthwashes while 30 did not observe any adverse effect. Adverse effect that were observed included staining of teeth, loss of taste, non-healing of ulcer, burning sensation and irritation mostly observed with chlorhexidine.

When asked about patient compliance, 6 specialists do feel patient compliance is satisfactory while 10 feel patients are not compliant, and majority i.e 32 specialists think patients are partly compliant for the use of mouthwashes. Clinicians explain that the reason for noncompliance includes lack of patient motivation, lack of understanding and ignorance, etc In improved effects that specialists are looking from mouthwashes, most common was analgesia while others were antibiotic effect, pleasant flavour and reduced irritation.

Out of all these 42 specialists 8 were aware of evidence basis for these mouthwashes while 32 were not aware of any evidence bases in these prescriptions and used mouthwash empirically.

DISCUSSION

Common complaints of patients related to oral mucositis include changes in sensation, difficulty talking and swallowing, the presence of mouth sores, and sometimes dryness. Often patients experience a cluster or constellation of signs and symptoms including pain, bleeding, infection, ulceration, xerostomia, taste alterations, and altered nutritional status⁴. Mucositis interferes with comfort, nutrition, communication, and general well-being. Individuals who have received high-dose therapy have reported oral mucositis to be the most distressing symptom they experienced. It is also complicated by radiation induced caries and other dental problems.

Study was carried out in a tertiary referral centre and various clinicians participated in the study. These specialists were examining HN cancer patients on a regular basis.

Out of all the specialists 7% (3) were not prescribing any mouthwash to the patients. As per MASCC/ISOO⁸ and other guidelines⁹, regular, systematic, bland rinses, and moisturizers using a standardized oral care protocol should be implemented for all patients. Rinsing the oral cavity after flossing and brushing helps to maintain the moisture in the mouth, removes

the remaining debris and toothpaste, and reduces the accumulation of plaque and infection.

Guidelines mention primary aim should be to promote basic oral hygiene practices that will help to reduce subsequent complications. Panel⁸ also recommends that oral pain assessment is essential for the supportive care. A systematic and routine assessment of the oral cavity should be performed in all patients vulnerable to be at risk for developing oral mucositis. This permits early identification of the lesion and makes timely intervention possible.¹²

There exists non uniformity among prescription of mouthwash and the phase of therapy in which mouthwashes are prescribed. (Table2).

According to guidelines⁹, to date, no research has demonstrated the benefit of one rinsing solution over another. It is recommended that patients be given their choice of rinse solution, to optimize patient compliance with oral hygiene practice. However according to study by Dodd JM et al¹¹, homemade mouthwash containing salt and soda is found to be comparably effective with the advantage of being cheaper and easily available. In our study practitioners selected homemade(11) and commercial mouthwashes(8) and both (20) for prescriptions.

Most of the clinicians (22) selected both salt and sodium bicarbonate as homemade preparations. There existed great diversity in the amount of ingredient and quantity of water. However according to guidelines¹², This saline solution is made by adding ½ tablespoon salt to 1 litre water and the solution can be administered at room or refrigerated temperatures, depending on patient preference. Sodium bicarbonate (baking soda) ½ tablespoons can be added, if viscous saliva is present. As per another guideline⁹, this is prepared by adding ½ teaspoon of baking soda to 8 ounces of lukewarm water.

There are no recommendations for frequency, method of use and duration for which mouthwash should be kept in mouth. Yet various researcher advocate using of mouthwashes after brushing and flossing after every meal.

Very few researchers (6) found good patient compliance. Reason for noncompliance were various including included lack of patient motivation, lack of understanding and ignorance, etc. It is interesting that most of the clinicians attempted to bring out the patient related factors for non-

compliance. We believe that if patient is properly explained and sensitized about the treatment, its effects, need for oral hygiene and ways to do it they tend to comply with the instructions. The instructions may have to be repeated during first week of treatment to reinforce it. This requires more time to be spent with the patients and is one area where little efforts may improve the compliance.

Among commercially available mouthwashes, chlorhexidine was most commonly selected followed by betadine and others. According to various guidelines^{8, 9, 10, 12} chlorhexidine is not to be prescribed for mucositis. Though few researchers¹³ found it to be effective in the treatment of chemotherapy induced oral mucositis. It is important to avoid all alcohol based mouthwashes in treating patients with oral mucositis. As per various studies¹³ benzydamine has shown improved ulcer healing with good analgesic, antimicrobial and anti-inflammatory effect. Other agents such as Granulocyte Macrophage Colony Stimulating Factor (GM-CSF) are selected by very few of the specialists. There exists controversy regarding effect of GM-CSF mouthwash in reducing oral mucositis depending upon the therapy received. In view of inconsistent results MASCC/ISOO guidelines do not recommend the routine use of GM-CSF and G-CSF in any form for the prevention or treatment of oral mucositis¹².

51% of the practitioners were aware of the adverse effects of mouthwashes whereas 46% were not aware. Out of all the specialists 9 had observed adverse effects of mouthwashes while 30 did not observe any adverse effect.

Specialists are looking for the improved mouthwashes which are effective in the treatment of analgesia, antibiotic effect and ulcer healing effect. Also practitioners suggest improved flavours to increase patient compliance.

The fact that almost 3/4th of clinicians use mouthwash empirically stress the fact that there is a need for increasing awareness of evidence bases for oral hygiene, mucositis prevention and treatment among specialists.

As per other studies, when patients sought assistance from their physician or nurse in the treatment setting, they were offered a variety of "favourite" remedies with instructions to "swish and spit." Though used interchangeably these terminologies are different. Rinsing means washing with clean water to remove, dirt, or impurities. Gargle means wash one's mouth and throat with a liquid that is kept in motion by breathing through it with a gurgling sound and swish means move with a hissing or rushing sound.

We have not found any adverse effects of homemade mouthwash.

Many of these patients indicated that this empirical approach was not only ineffective, it actually increased their discomfort and mouth problems. These approaches to mouth care are not unique to these referral sites¹¹. Our study also reports the similar finding. This must be taken into consideration and strong evidence basis must be formulated. There are recommendations given by Mucositis Study Group of MASCC/ISOO⁸ and various other study groups^{9, 10, 12}. Clinical studies of oral mucositis have been increasing over the past few years⁵. Previous recommendation also stressed the need for education of staff as well as patients and their families. Despite a surge in research efforts to better understand its

pathogenesis and discover effective interventions, oral mucositis (OM) is an unmet need with a high priority for the development of an effective treatment

CONCLUSION

Lot of variations exist in the type of mouthwashes prescribed, their way of use, duration and efficacy perceived by various practitioners. Though this is just a representative of one cancer hospital, it may not be the generalized situation and still more studies are needed to be carried out with larger sample size. Specialists and patients should be properly told about the proper oral care and the importance of outcome. There is an urgent need of extensive research for the standardization of mouthwash prescriptions and clinical trials for the rationale of use of various mouthwashes. Evidence basis must be provided to the specialists for the better palliative care of the patients with oral mucositis. Also collaboration with a multidisciplinary team should be included in all phases of treatment for the better management of all the symptoms.

This survey highlights that the aspect of oral hygiene in patients with head and neck cancer is accepted by all specialist as to be of utmost importance. And at the same time it brings out the lack of consensus among the treating specialist as to the ways to achieve it. The evidence available in the literature is relatively less given the magnitude of the issue. Through this survey we would like to stress upon the need for extensive and active dialogue between the various treating specialist to reach a consensus on the use of mouthwash. This will enable to standardize and generate better and homogenous evidence.

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Appendix 1: Questionnaire

HEAD AND NECK CANCER SURVEY – MOUTHWASH

- Participation in this survey is voluntary
- There are no rights or wrong answers.
- Please mark all the options applicable to you

- 1) Your Designation
 - i) Physician
 - ii) Dentist
 - iii) Postgraduate
- 2) Which type of treatment you provide to your patient?
 - i) Chemotherapy
 - ii) Dental treatment
 - iii) Radiotherapy
 - iv) Surgery
- 3) What is your speciality?
 - a) General Dentist
 - b) Medical Oncologist
 - c) Oral Medicine
 - d) Prosthodontist
 - e) Oral And Maxillofacial Surgeon
 - f) Radiation Oncologist
 - g) Surgical Oncologist
- 4) How many Head and Neck cancer patients do you approximately see per month?
 - i) <50 (Please specify number _____)
 - ii) 50 – 100
 - iii) 100 – 200
 - iv) > 200 (Please specify number _____)
- 5) What treatment do you feel is more commonly responsible for oral symptoms?
 - i) Chemotherapy
 - ii) Chemo radiotherapy
 - iii) Radiotherapy
 - iv) Surgery
- 6) Do you prescribe any mouthwash?
 - i) Yes
 - ii) No
- 7) With what primary objective you prescribe mouthwash?
 - i) Analgesic
 - ii) Antibiotic
 - iii) Healing of ulcer
 - iv) Oral hygiene
 - v) Periodontitis
 - vi) Prevention of caries
 - vii) Xerostomia
- 8) When do you prescribe mouthwash? (Treatment: Indicates surgery/ radiotherapy / chemotherapy or combination)
 - i) Before treatment
 - ii) During treatment
 - iii) After Treatment
- 9) Which type of mouthwash you prefer?
 - i) Homemade
 - ii) Commercial
 - iii) Both
- 10) Which homemade mouthwash you prescribe if any?
 - A) What are the main ingredients of it?
 - i. Common salt
 - ii. Sodium Bicarbonate
 - iii. Others (please Specify _____)
 - B) Please mark the quantity
 - i) (a pinch/teaspoon ,/tablespoon/ other _____) Of **salt** In (a glass/ 500ml/other _____)of water
 - ii) (a pinch/teaspoon ,/tablespoon/ other _____) Of **soda** In(a glass/ 500ml/other _____)of water
 - iii) Other _____
 - C) What temperature of water you advise?
 - i) Cold

If answer is no, please go to question no. 25

- ii) Hot water
 - iii) Lukewarm
 - iv) Room Temperature
- 11) Which commercially available mouthwash you prescribe?
- i) Benzocaine
 - ii) Benzadymine
 - iii) Betadine
 - iv) Nystatin
 - v) Hydrogen Peroxide
 - vi) Chlorhexidine gluconate mouthwash (0.12%)
 - vii) Granulocyte macrophage–colony–stimulating factor (GMCSF) mouthwashes
 - viii) Magic mouthwash (viscous lidocaine solution (0.5%), 5 mL; diphenhydramine hydrochloride (Benadryl 0.0312%), 0.25 mL; and aluminum hydroxide suspension(Maalox), 14.75 mL.
 - ix) Sodium /potassium Fluoride
 - x) Others (Please Specify)
- _____

12) Do you think there is any difference between gargle, rinse and swish?

- i) Yes
- ii) No

13) What do you advice?

- i) Gargle
- ii) Rinse
- iii) Swish

14) How many times a day patient is advised to use a mouthwash?

- i) Once
- ii) Twice
- iii) Thrice
- iv) Others (please specify number of times) _____

15) How much time do you feel mouthwash should be retained in mouth?

- i) 30 seconds
- ii) One minute
- iii) Two minutes
- iv) Five Minutes
- v) Others (Specify time) _____

16) For how long patient is advised to use it?

- i) 1 month or less
- ii) 6 months
- iii) More than 6 months
- iv) Till symptoms subside

v) Others (please specify) _____

17) Which mouthwash you feel is most effective in your use?

18) Please mark all the objectives and percentage it achieves.

Objective	<25%	25-50%	50-75%	75-100%
i) Analgesia				
ii) Antibiotic				
iii) Healing of ulcer wound				
iv) Oral hygiene				
v) Reduction of Xerostomia				

19) Do you feel that the patient is compliant to all the instructions provided about mouthwash?

Y/N/ Partly

20) If no; what are the reasons for noncompliance?

21) Are you aware of any adverse effect of the mouthwash you prescribe?

- i) Yes
- ii) No

22) Do you observe any adverse effect of a mouthwash?

- i) Yes
- ii) No

23) If yes, please mention the side effect and the mouthwash that caused this effect.

24) Please mention what more improved effect you are looking for from the mouthwashes.

25) Are you aware of any evidence basis for methods of using mouthwash? Y / N

If yes can you provide the source:

26) Do you use it empirically? Y / N

• If you wish to read the analysis of the survey result, please provide your contact details/ email id. (optional)

• Name: _____

Email id :

• Contact No : _____

Source of support: Nil, Conflict of interest: None Declared