



## International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

ISSN:2347-6567

IJAMSCR /Volume 6 / Issue 3 / July - Sep - 2018  
www.ijamscr.com

Research article

Medical research

### Choice of root canal irrigants by general dental practitioners of Tamilnadu - A questionnaire study

Dr. A. Jayasenthil<sup>1</sup>, M.D.S, Dr. K. Indu<sup>2</sup>

<sup>1</sup>Department of conservative dentistry and endodontics, Asan memorial dental college and hospital, Chengalpattu

<sup>2</sup>Private practitioner, Chennai

\*Corresponding Author: Dr. A.Jayasenthil

Email id: ajse2000@gmail.com

#### ABSTRACT

##### Aim

To find out the choice of root canal irrigant by general dental practitioners

##### Methodology

A questionnaire consisting of 20 questions were randomly distributed to 500 dental practitioners in Tamilnadu. The results were then analyzed and tabulated.

##### Results

It was found in the study that mostly dental practitioners prefer normal saline combined with sodium hypochlorite as primary irrigant.

##### Conclusion

Saline is the primary choice of irrigant in root canal procedures. It is necessary for the dental practitioners to update the knowledge of recent root canal irrigants with their uses.

**Keywords:** Dental Practitioners, Irrigant, Sodium Hypochlorite, General dentist, Survey, Endodontic treatment.

#### INTRODUCTION

Development of new materials, devices and techniques, quality of treatment in endodontics has led to increased endodontic success rate. Although many modern techniques that use NiTi files, more than 35% of the root canal's surface are left uninstrumented after non-surgical root canal treatment. For removing the debris and addressing these uninstrumented surfaces, it becomes mandatory to copiously irrigate the root canal [1,2].

One of the most important steps in root canal system is irrigation and one of the most critical one during endodontic treatment. The main etiological cause of endodontic failure is the residuals of necrotic or vital tissue within the root canal space. Therefore, the irrigation protocol plays a key role in disinfection of root canal space [3].

The most popular irrigant seems to be Sodium hypochlorite since it has a broad antibacterial spectrum and some ability to inactivate endotoxins. Therefore, Sodium hypochlorite remains the

irrigant of choice worldwide in spite of its high toxicity, inability to completely remove the smear layer and very unpleasant taste to patients. However, antibacterial trait of 2% Chlorhexidine has made it one of the commonly used endodontic irrigants [3-10].

There exists a controversy regarding whether it is advantageous to remove the smear layer that is formed during root canal instrumentation. Current methods to remove smear layer might involve the use of a chelating agent during irrigation or as a final rinse in combination with other irrigants [11].

Different adjuncts have been developed in an effort to improve the delivery and effectiveness of irrigants. Both sonic and ultrasonic agitation of the irrigant has been studied for their ability to improve canal cleanliness. In spite of the progress that academic teaching and endodontic societies have made so far in this field of growing interest, there is a lack of relevant information regarding the attitude of general dental practitioners towards irrigation protocol [12].

So, the aim of the survey was to reveal the choice of root canal irrigant used by general dental practitioners.

### Methodology

A survey was conducted with appropriate questionnaire which was designed of 20 questions. That questionnaire comprised of the following items: commonly used irrigant, volume of irrigant used, removal of smear layer, irrigant used for periapical lesion, irrigant used for treating vital pulp, irrigant used for treating necrotic pulp, irrigant used for retreatment procedures, gauge of needle, depth of penetration of needle, tip design of needle, volume of syringe used for irrigation, most effective irrigant.

For the purpose of this study a 500 questionnaire were randomly distributed to the dental practitioners in Tamilnadu. The sample was personally collected from them. Results were then analyzed and tabulated.

### Questionnaire

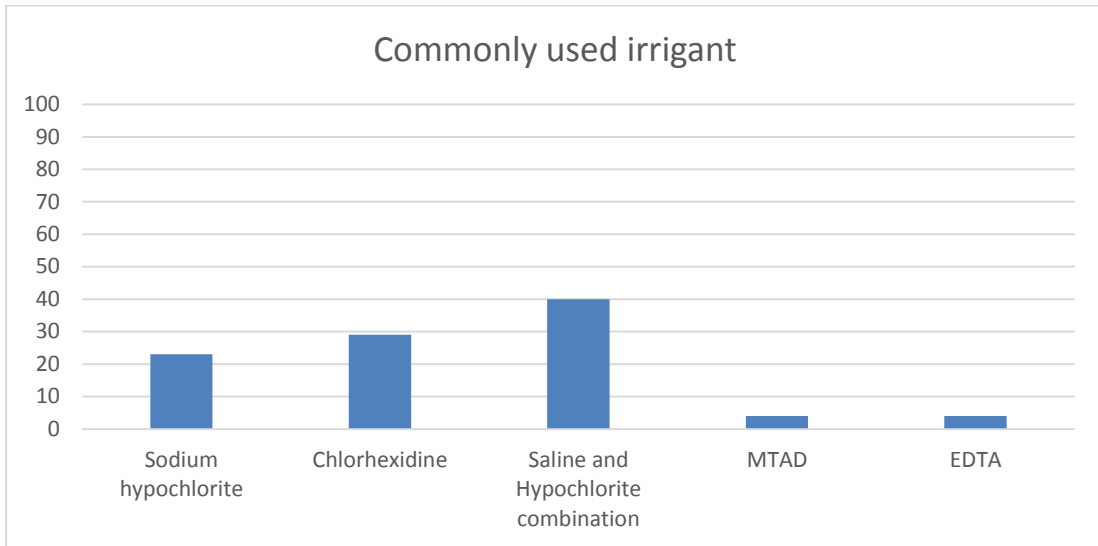
1. For how many years are you practicing endodontic therapy?  
a. 21-30 b. 11-20 c. 5-10 d.  $\geq 5$
2. Do you regularly treat?  
a. Single rooted b. Multi rooted c. Re-treatment cases
3. On the average, how many root canal therapies do you perform per week?  
a. 0-5 teeth b. 6-10 c. 11-15 d. 16-20 e. 21 or above
4. Which all irrigants do you use?  
a. Sodium hypochlorite b. Chlorhexidine c. Saline  
d. EDTA e. MTAD f. sterile water
5. Which irrigants do you commonly use?  
a. Sodium hypochlorite b. Chlorhexidine c. Saline  
d. EDTA e. MTAD f. Sterile water
6. How much volume of irrigant do you employ per canal?  
a. 0.5ml b. 2.5ml c. 5-10ml d.  $\geq 10$ ml
7. Rank the reason for your primary irrigant selection from most important to least important.  
a. Antibacterial capacity b. Biocompatibility c. Tissue discoloration d. Substantivity e. Expense
8. Do you routinely aim to remove smear layer?  
a. yes b. no
9. Does your choice of irrigants differ based on the pulpal or periapical diagnosis?  
a. Yes b. No
10. Which of the following irrigants could you primarily utilize when treating a tooth with vital pulp?  
a. Sodium hypochlorite b. Chlorhexidine c. Saline  
d. Sterile water e. Water
11. Which of the following irrigants could you primarily utilize when treating a tooth with necrotic pulp?  
a. Sodium hypochlorite b. Chlorhexidine c. Saline  
d. Sterile water e. Water

12. Which of the following irrigants could you primarily utilize when treating a tooth with radiographic evidence of periapical lesion?
  - a. Sodium hypochlorite
  - b. Chlorhexidine
  - c. Saline
  - d. Sterile water
13. Which of the following irrigants could you primarily utilize when doing retreatment?
  - a. Sodium hypochlorite
  - b. Chlorhexidine
  - c. Saline
  - d. Sterile water
  - e. Other
  - f. Do not perform retreatment
14. Which, if any adjuncts to irrigation do you utilize?
  - a. Ultrasonic activation
  - b. Sonic
  - c. Negative pressure
  - d. Endovac
  - e. Other
  - f. None
15. What is the routine gauge of the needle employed by you, during syringe irrigation?
  - a. 26
  - b. 27
  - c. 30
  - d. 31
16. How much depth of penetration of needle do you prepare for irrigation?
  - a. 6mm from apical foramen
  - b. 2mm
  - c. 3mm
  - d. 4mm
17. Which tip design of the needle do you use?
  - a. Brush covered needle (Navitip fx)
  - b. Side vented needle (RC twents)
  - c. Single bevel needle
  - d. Other
18. What is the volume of syringe do you use for irrigation?
  - a. 1ml
  - b. 2.5ml
  - c. 5ml
  - d. 10ml
19. What is the duration of irrigation do you prepare per canal?
  - a.  $\leq 30$ sec
  - b. 30-1min
  - c. 1-2min
  - d.  $\geq 2$ min
20. In your opinion which irrigant do you feel effective?
  - a. Sodium hypochlorite
  - b. Chlorhexidine
  - c. Saline
  - d. EDTA
  - e. MTAD
  - f. Sterile water
  - g. Citric acid
  - h. Other

## RESULTS

Table 1: Commonly used irrigant

Irrigants	Percentage usage by dental practitioners
Sodium hypochlorite	23
Chlorhexidine	29
Saline and Hypochlorite combination	40
MTAD	4
EDTA	4



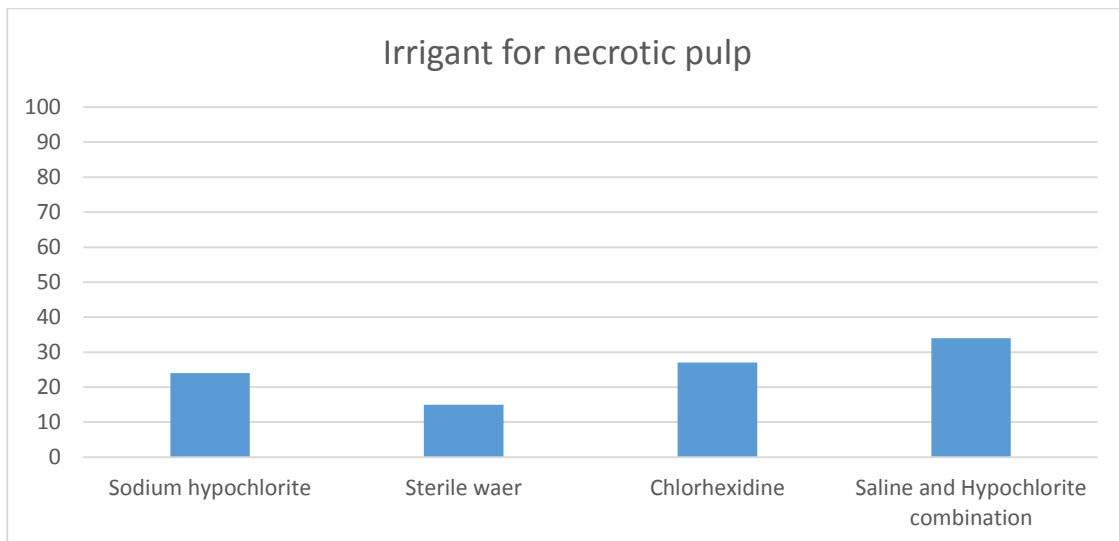
Graph 1 : Commonly used irrigant

Table 2: Removal of smear layer

Removal of smear layer	Percentage
Yes	79
No	21

Table 3: Irrigant for necrotic pulp

Irrigants	Percentage usage by dental practitioners
Sodium hypochlorite	24
Normal saline	15
Chlorhexidine	27
Saline and Hypochlorite combination	34



Graph 2: Irrigant for necrotic pulp

Table 4: Irrigant for periapical lesion

Irrigants	Percentage usage by dental practitioners
Sodium hypochlorite	25
Chlorhexidine	33
Normal saline	9
Saline and Hypochlorite combination	33

Table 5: Irrigant for retreatment

Irrigants	Percentage usage by dental practitioners
Sodium hypochlorite	28
Chlorhexidine	32
Saline and Hypochlorite combination	30
Other	5
Do not perform	5

Table 6: Tip design of needle

Tip of needle	Percentage usage by dental practitioners
Single bevel needle	65
Side vented needle	18
Brush covered needle	12
Other	5

## DISCUSSION

The purpose of this study is to know the choice of root canal irrigant by the dental practitioners in Tamil nadu. In the present study, it was found that majority of respondents (40%) use normal saline in combination with sodium hypochlorite as their primary irrigant. In the International studies, it was found that Sodium hypochlorite was used as their primary irrigant. It shows that usually the developed countries tend to use Sodium hypochlorite and the developing countries rely mainly on saline. The probable reason for such a finding could be the ease of availability of normal saline, its cost effectiveness as opposed to other effective irrigants and established fact that normal saline is least harmful to the oral hard and soft tissues [4-10].

79% of the respondents in this study aim to remove smear layer. Many dental practitioners fail to use chelating agent for removal of this smear layer because of lack of knowledge of irrigants. The ideal irrigant of choice for necrotic pulp is Sodium hypochlorite [12]. But in this study the dental practitioners commonly use combination rather than sodium hypochlorite alone.

The irrigant of choice for periapical lesion is Chlorhexidine due to its high antibacterial action and substantivity. For retreatment, Chlorhexidine is widely used due to its effectiveness against *E. fecalis*. Root canal failures are mainly due to the presence of *E.fecalis* and chlorhexidine is the suitable one for this.<sup>4</sup> Many practioners do not perform retreatment because it is more complicated procedure.

## CONCLUSION

The findings of this study are

- That most dental practioners are using saline as primary irrigant. It shows there is a high need to update the knowledge on effective irrigants than normal saline.
- Sodium hypochlorite should be used for effective treatment. Mostly dental practioners do not use it because of inexperience and fear of sodium hypochlorite accidents.
- Smear layer should be removed using chelating agents.

## REFERENCES

- [1]. Peciuline V, Maneliene R, Drukteinis S, Rimkuviene J. attitudes of general dental practitioners towards endodontic standards and adoption of new technology: literature review. *Stomatologia* 11(1), 2009, 11-14.
- [2]. Peters OA, Schonenberger K, Laib A. Effects of four ni-ti preparation techniques on root canal geometry assessed by micro computed tomography. *Int Endod J* 34, 2001, 221-30
- [3]. Baker NA, Eleazer PD, Averbach RE, Seltzer S. Scanning electron microscopic study of efficacy of various irrigating solutions. *J Endod* 1, 1975, 127-35.
- [4]. Zehnder M. Root canal irrigants. *J Endod* 32(5), 2006, 389-98.
- [5]. Kaptan RF, Haznedaroglu F, Kayaban MB, Basturk FB. An Investigation of Current Endodontic Practice in Turkey. *Sci World J* 2012, 565413.
- [6]. Dutner J, Mines P, Anderson A. Irrigation trends among American Association of Endodontists members: a web based survey. *J Endod* 38(1), 2012, 37-40.
- [7]. Chan AWK, LowDCY, Cheung GSP, Ng RPY. A questionnaire survey of endodontic practice profile among dentists in Hong Kong *Dent J* 3(2), 2006, 80-7.
- [8]. Basmadjian-Charles C, Bourgeois D, Condeville L, Lebrun T. National survey of endodontics in general practice in France. *Eur J Prosthodont Restor Dent* 12(4), 2004, 144-53.
- [9]. Al-Omari WM. Survey of attitudes, materials and methods employed in endodontic treatment by general dental practitioners in North Jordan. *BMC Oral Health* 4(1), 2004, 1.
- [10]. Slaus G, Bottenberg P. A survey of endodontic practice amongst Flemish dentists. *Int Endod J* 35(9), 2002, 759-67.
- [11]. Torabinejad M, Khademi AA, Babagoli J, et al. A new solution for removal of the smear layer. *J Endod* 29, 2003, 170-5.
- [12]. Haapasalo M, Shen Y, Qian W, Gao Y. Irrigation in endodontics. *Dent Clin North Am* 54(2), 2010, 291-312

**How to cite this article:** Dr. A. Jayasenthil, M.D.S, Dr. K. Indu. Choice of root canal irrigants by general dental practitioners of Tamilnadu - A questionnaire study. *Int J of Allied Med Sci and Clin Res* 2018; 6(3): 556-561.

**Source of Support:** Nil. **Conflict of Interest:** None declared.