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Rewalling for Successful Endodontics

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Abstract: ***Aim: The aim of the study was to assess the knowledge, attitude and practice about Pre-Endodontic Buildup (PEB) among Postgraduates, Academicians and Practitioners who perform root canal treatment in India. Materials & Methods: A cross sectional online survey was conducted among Postgraduates, Academicians and Private Practitioners who perform root canal treatment in India. About 160 participants enrolled and their consent was obtained. The information was collected from each participant through structured questionnaires containing answers in the form of multiple choices. Statistical Analysis: Chi Square Goodness of Fit test was used to compare the distribution in the responses for the study questionnaire by the study participants. The level of significance was set at P<0.05. Results: The following was inferred from this study: a) Overall knowledge score towards PEB was about 66.3% b) II. Knowledge scores significantly differed among Endodontists (89.3%) and Non-endodontists (46.4%) c) III. Lower Practice scores among Endodontists and Non endodontists were associated with lack of time while insufficient knowledge was mostly associated with Non endodontists. Conclusion: The findings of this study suggests that efforts should be made to increase the awareness of PEB among Endodontists and Non endodontists to improve their practices and thereby enhance the success of treatment.***

Keywords: Pre-Endodontic Buildup, Inter-appointment temporization, KAP survey

1. Introduction

Successful endodontic treatment needs elective chemical and mechanical debridement coupled with the removal of pulp tissue remains, microorganisms, and proper canal shaping to enable a three-dimensional fluid-tight obturation [1]. The effectiveness of root canal therapy is determined not only by the efficacy of each endodontic procedure, but also by the following coronal restoration, which must be in harmony with the surrounding hard and soft tissues. [2] Rootcanal therapy can be completed in a single session, in non-infected, vital teeth obviating the requirement for temporization [3]. On the contrary, many clinical situations involving infected canals need intracanal dressing in a multi-visit treatment, wherein elective temporization for varying durations becomes mandatory [4]. The inadequacy of an appropriate provisional restoration during the root canal therapy was placed second among the main factors in pain concerns after treatment commenced. [5]. A four-walled access cavity goes a long way towards achieving endodontic therapeutic goals. The paradox is that root canal treatment is commonly required for teeth that have lost a considerable percentage of tooth structure [6]. These teeth must be "pre-treated" prior to root canal treatment. This enables both efficient disinfection and secure positioning of the rubber dam over the treated tooth [7]. The study's goal was to examine postgraduates, academicians, and practitioners who undertake root canal therapy in India's knowledge, attitude, and practice regarding pre-endodontic buildup.

2. Materials & Methods

A cross sectional online survey was conducted among Postgraduates, Academicians and Private Practitioners who perform root canal treatment in India. About 200 participants enrolled anonymously and their consent was obtained. Each participant's information was gathered using structured questionnaires (18 in total), which contained multiple choice answers (Figure 1 & 2). The survey was disseminated via electronic means. The information gathered was entered into excel sheets. The study's findings were represented graphically using bar graphs and pie charts.

Questionnaire

1. Are you a ?
- Postgraduate
- Academician
- Private practitioner
- General dentist
- Academician & private practitioner

2. What is your specialty?
- General Dentist
- Conservative Dentistry & endodontics
- Other specialities

3. Number of years of practice?
- < 5
- 5-10
- >10

3. In your college / institute / practice, the most number of cases you advice for root canal have?
- Intact crown
- Loss of one wall
- ≥ 2 walls

4. Are you able to place rubber dam in all cases which you require RCT?
- Yes
- No

5. Are you aware of the concept of Pre Endodontic Buildup?
- Yes
- No
- Not Sure

6. If Yes, do you follow it as a routine procedure?
- Yes
- No

7. If No, what could be the reason for you not to carry out Pre-Endodontic Buildup?
- lack of time
- Insufficient Knowledge
- consider it as Unnecessary

8. In multiple visits what is the role of Pre-Endodontic Buildup?

- o No role
- o Maintains seal
- o Aids in rubber dam placement
- o Functional & Aesthetic Role

9. Various methods of Pre-Endodontic Buildup include :

- o Donut Technique
- o Modified Donut Technique
- o Canal projection
- o Others

10. Materials used for Pre-Endodontic Build up are

- o Composite
- o GIC
- o Miracle Mix
- o Not sure

11. What all can be used as Canal Projectors?

- o Paper Points
- o Gutta percha
- o Plastic Delivery Tips
- o Hypodermic needles
- o Others

12. Is there any correlation between Pre-Endo buildup & Straight line access?

- o Yes
- o No
- o Not sure

13. Do you think Pre-Endo Buildup has any role in working length determination?

- o Yes
- o No
- o Maybe

14. If Yes, how?

15. Do you think Pre-Endodontic Buildup enhance the outcome of treatment?

- o Yes
- o No
- o Maybe

16. If Yes, why?

17. Can lack of Pre-Endodontic Buildup be one of the etiological factors for Retreatment?

- o Yes
- o No
- o Not sure

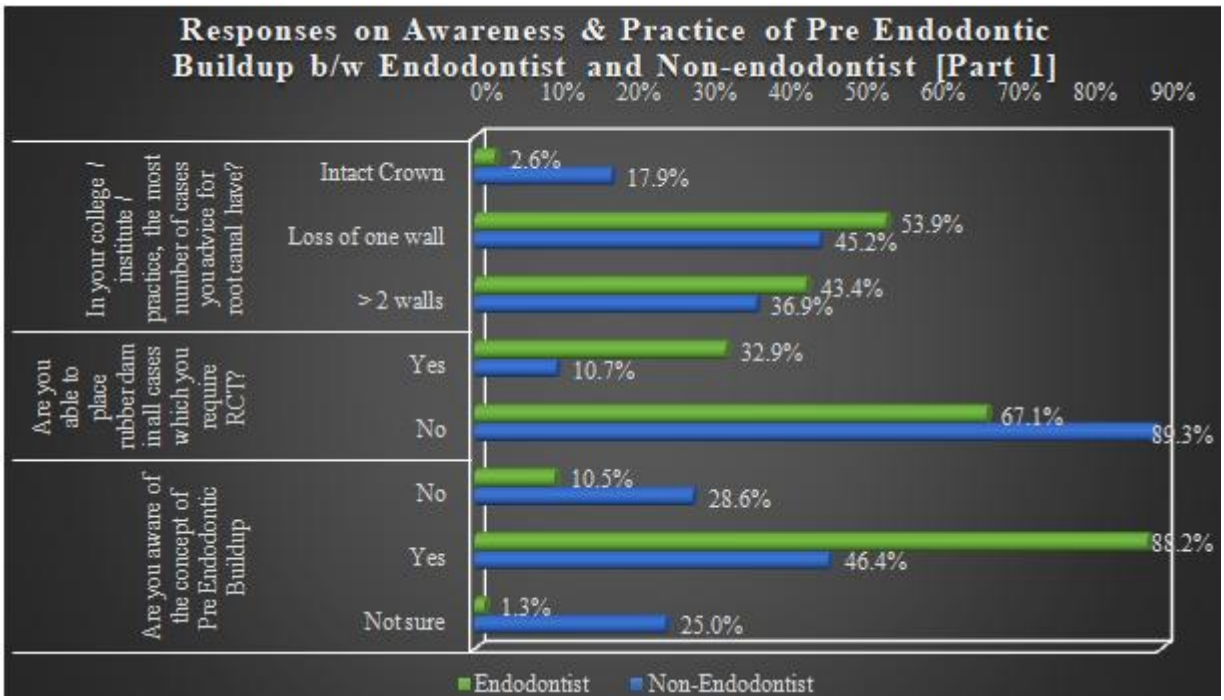
18. How did you gather information about Pre-Endodontic Buildup?

- o Articles
- o Seminars
- o Conferences / CDE programs
- o Social media
- o others

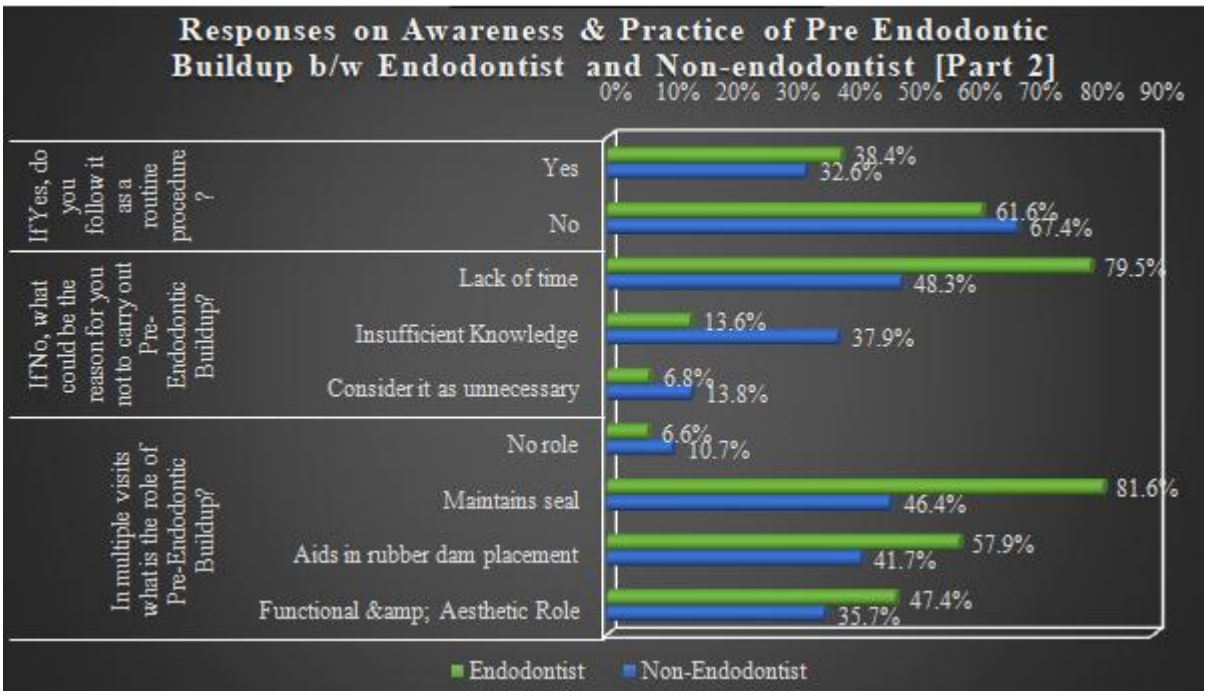
3. Results

43.4% of endodontists and 36.9% of non-endodontists had patients coming in with more than 2 walls lost.67.1% and 89.3% of non-endodontists couldn't place rubber dam in all cases which require RCT.88.2% of endodontists and 46.4% of non-endodontists were aware of the concept of pre-endodontic buildup. (Graph 1) 38.4% of endodontists among them performed it as a routine procedure while only 32.6% of non-endodontists performed it as a routine procedure. (Graph 2) 66.7% of non-endodontists were not sure of the methods of pre-endodontic buildup. (Graph 3) 73.7% of endodontists believed that rewalling had a role in working length determination while only 19% of non-endodontists believed the same. When questioned about its role in straight line access 60.5% of endodontists believed it had a role while 69% of non-endodontists weren't sure. Most endodontists had an idea about canal projectors while non-endodontists didn't. (Graph 4).

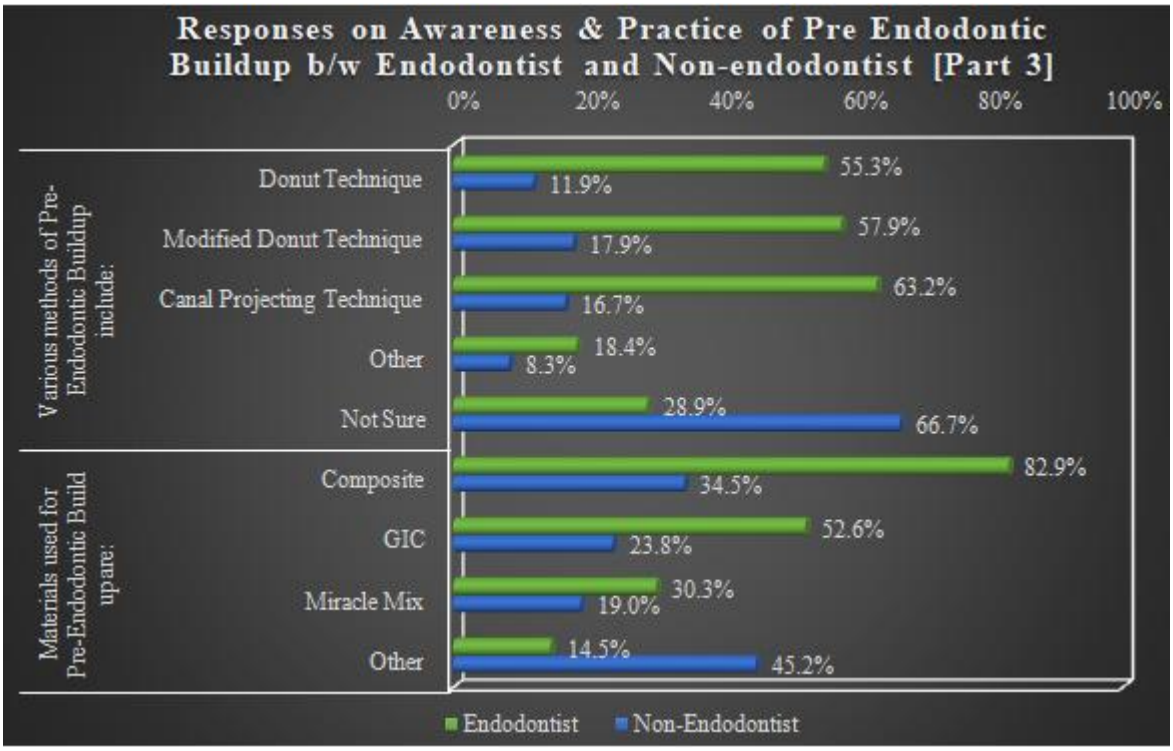
82.9% of endodontists believed it has a role in enhancing the outcome of treatment.33.3% of non-endodontists agreed.64.5% of endodontists believed it had a role to play in retreatment while 71.4% weren't sure. (Graph 5)



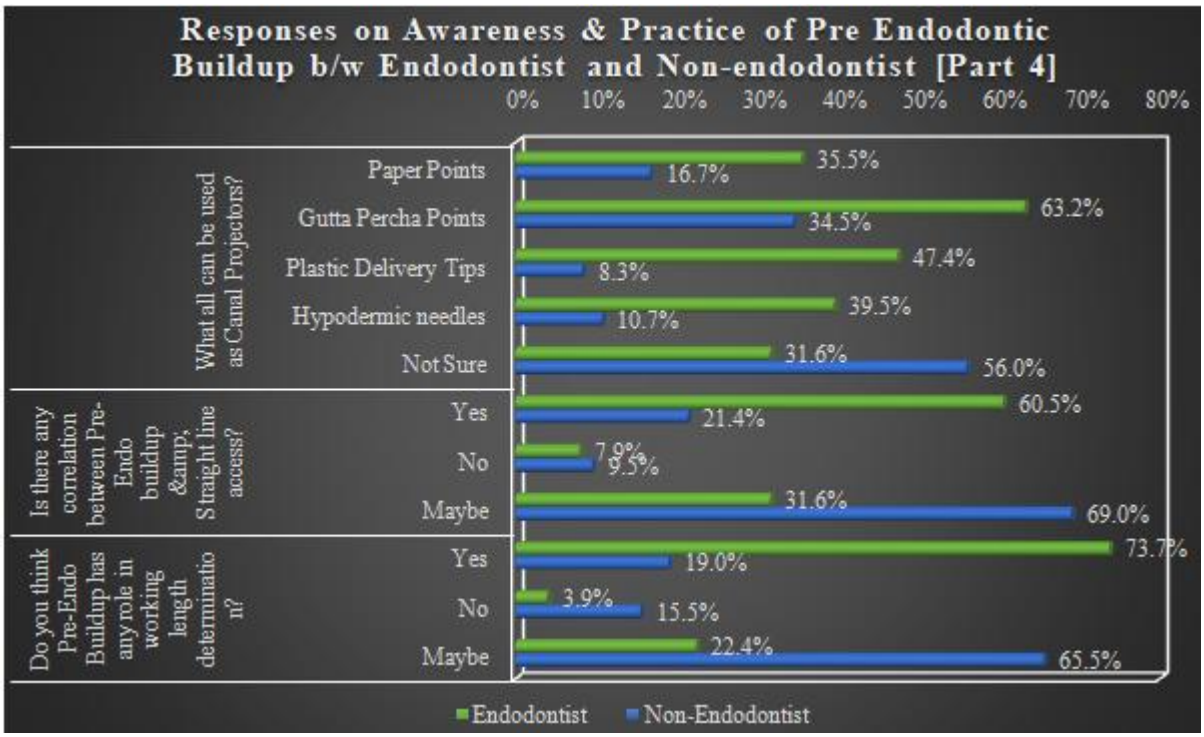
Graph 1



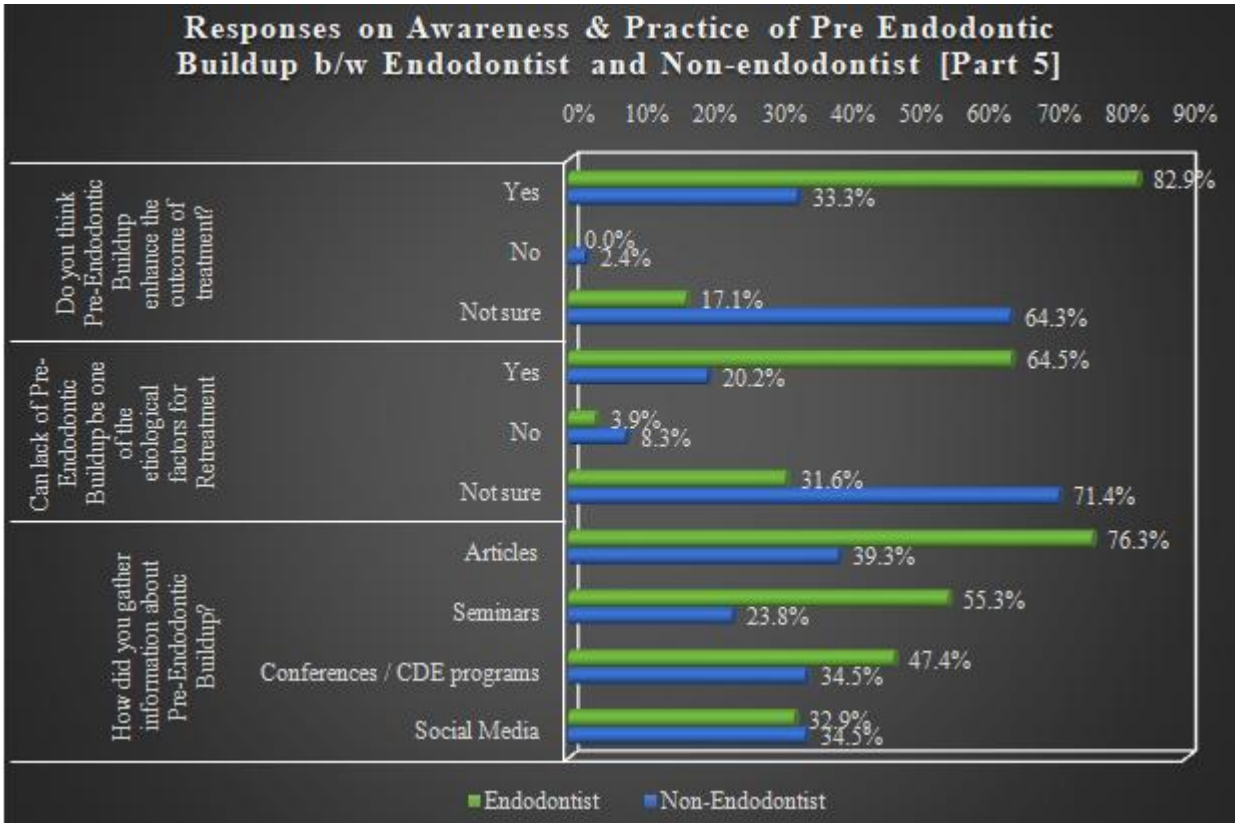
Graph 2



Graph 3



Graph 4



Graph 5

4. Discussion

The goals of endodontic therapy are to clean, shape and obturate the root canal to fulfill the Shilders triad. This can be achieved efficiently only when we have 4 walls intact so as to enable adequate isolation and hence better chemical and mechanical debridement. Unfortunately, in a clinical setting we often come across teeth that have lost one or more walls making these goals difficult to achieve. [8]

Pre endodontic buildup also referred to as rewalling is a procedure wherein the lost walls are built up. Composite, GIC, miracle mix, and other materials can be employed. [9]

This simple step serves to protect and stabilize the tooth during the endodontic phase of treatment, facilitates rubber dam placement, causes less marginal leakage, reduce the fracture potential of weakened tooth structure thus providing stable repeatable reference points, facilitates instrument introduction, act as a reservoir for irrigant, maintains coronal seal, provides functional and aesthetic role and prevents the growth of gingival overhangs into access [10, 11].

In our study only 38.4% of endodontists and 32.6% of non-endodontists performed it as a routine procedure. The reason why most of them could not perform it was attributed to lack of time. Many studies have supported that lesser time taken for the appointment leads to less anxiety and better experience for both the patient and the dentist. [12] However, lack of time should not compromise the outcome of treatment.

It was seen in studies done by Shirin et al and Robert Heydrich and several others that pre-endodontic buildup enhances the treatment outcome. [6, 13] This is by providing a stable reference point, straight line access and by helping in maintaining an adequate coronal seal. Salivary microleakage with bacterial penetration is an indicator of loss of coronal seal. A contaminated pulp chamber acts as a reservoir of bacteria and their endotoxins. The significance of coronal seal in preventing ingress of bacteria has been proved many decades ago, as shown in the studies by Marshall and Massler (1961), Ray and Trope (1995). PEB of the coronal structure, limits microbial ingress, thus helps in limiting coronal leakage. However, care should be taken that the restorative material does not clog the root canals. [14] For this canal projectors can be used. Hypodermic needle, greater tapered gutta percha, plastic delivery tips, and paper points are the various kinds of canal projectors. [15] The awareness about the use of canal projectors was alarmingly low among non-endodontists, as 56% of them were not sure of different canal projectors that can be used. This shows that we need to increase the awareness regarding pre-endodontic buildup among all dentists.

Traditional non-adhesive pre-endodontic restoration techniques such as amalgam core build-up, temporary crowns or copper bands may still be useful for some clinicians when done correctly, [16] they also have a number of drawbacks that, combined with the development of adhesive approaches, have limited their clinical utility for this purpose. [17, 18] Various other methods of pre endodontic buildup include canal projection technique, donut technique and modified donut technique/ composite collar technique. [11]

Donut technique is recommended for teeth that have lost more than one wall and have a lot of peripheral margins into

the dentine. In clinical scenarios where matrix stability is not achievable, pre-endodontic core build-ups may be employed as a stopgap measure to assist endodontic therapy before definitive crown fabrication.1[9]To avoid obstruction of root canal orifices, a suitable barrier such as cotton pellets, thermoplastic gutta-percha, PTFE, or liquid dam is used, followed by circumferential build-up of the cavity walls. Composite collar approach is a modification of the donut technique.

One of the benefits is the ability to maintain access to the root canal system, which reduces difficulties with canal positioning and patency.2[0] Concerns have been raised about marginal adaptation and overhangs. Fiber reinforcement can be done before proceeding with final restoration of donut cavity.2[1]

Canal projection-This approach involves core build-up with projection of root canal orifices from the pulp chamber floor to the cavosurface. Better visualization and straight-line access to the canals, canal individualization in cases of close proximity of canal orifces, correction of misdirected access cavity, improved hydraulic condensation of obturation materials, and adequate sealing and reinforcement of the chamber floor or perforation repair materials are some of the benefits.2[2]Drawbacks include more time-consumption for the temporisation between endodontic visits, aseach projected canal needs to be temporized as a separate cavity. To conclude, a benefit of carrying out a pre-endodontic buildup overweighs its limitations. Therefore, pre-endodontic build up should be carried out as a routine procedure.

5. Conclusion

The finding of this study suggests that efforts should be made to increase the awareness of pre-endodontic buildup among Endodontists and Non endodontists to enhance the success of treatment. When pre-endodontic build-up is recommended, clinicians should not regard it as a laborious task, but rather as an attempt to assure success and minimize patient discomfort.

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