



RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE OF PULP THERAPY IN PRIMARY TEETH AMONG  
PRIVATE DENTAL CLINICIANS IN SRINAGAR, INDIA

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Barriers.

ABSTRACT

**Aim:** The aim of this investigation was to conduct a survey among private dental practitioners in Srinagar city concerning their knowledge, attitude and practice of pulp therapy in primary teeth.

**Methodology:** This is a questionnaire based study formulated to determine the knowledge, attitude and practice of general dentists towards endodontic therapy in primary teeth. A total of 100 general dental practitioners were selected from various private dental clinics in Srinagar city and were questioned using a 10 item questionnaire. After explaining the purpose of the study questionnaire was distributed among them and results were obtained. Statistical analysis was done using IBM SPSS software version 11.0 and results were obtained.

**Results:** In our study 35% prescribed medication only, as the first line of treatment. Reason given by the general dentists for performing endodontic treatment in primary teeth was Pain elimination (63%). When asked about the materials used for pulp fixation during a pulpotomy procedure, 48% of the respondents preferred Buckley's formocresol and 60% of them do not use apex locator for working length determination. The most common material used for obturation of deciduous teeth was Zinc oxide eugenol 53% due to the availability of the same material (46%).

54% of the dentists used Hand held reamers as obturation technique of deciduous canals, 23% used Slow-speed lentulospirals and the final restoration preferred for endodontically treated primary tooth was GIC(35%). When asked about the barriers faced by the general dentists in treating children, majority 32% reported difficulty in managing children during treatment, 27% reported time consumption and financial loss as a major barrier in treating children. Majority (87%) of the general dentists wanted to have additional information regarding pulp therapy in deciduous teeth.

**Conclusion:** Limited pediatric dental education and experience in treating children may contribute to negligence towards child's teeth. Dentists need to update themselves regarding various treatment modalities in primary teeth.

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INTRODUCTION

The pulps of primary teeth are proportionately larger and correspondingly closer to the outer surface than permanent teeth. Therefore, dental caries in primary teeth can have a more rapid penetration (John I Ingle Endodontics). Root canal therapy in deciduous teeth was advocated as early as 1932 as a method for retaining those primary teeth which would otherwise be lost (Martazavi, 2004). The primary objective of pulp therapy is to maintain the integrity and health of the teeth and their supporting tissues. It is a treatment objective to maintain the vitality of the pulp of a tooth affected by caries, traumatic injury, or other causes (Guidelines on pulp therapy for primary and immature permanent teeth, 2009).

The approach regarding endodontic treatments on deciduous teeth are developed from clinical and histological studies. Interpretation must be focussed on determining whether the primary tooth pulp is normal, reversibly inflamed, irreversibly inflamed or necrotic. If it is determined to be vital or reversibly inflamed, the vital pulp therapy techniques of pulpotomy or indirect pulp treatment are indicated. If the pulp is determined to be irreversibly inflamed or necrotic, either a pulpectomy or extraction would be appropriate (Vidya *et al.*, 2015). The clinical management of a primary or permanent tooth with pulp or periapical disease is quite different mainly on the differences between the two types of teeth, with primary tooth longevity, coronal structural integrity, root canal morphology, and root anatomy (Hibbard and Ireland, 1957) being important features to be taken into account when planning the treatment (Hedge, 2011). Marsh and Largent (Marsh, 1967) indicated that the goal of the pulpectomy procedure in primary teeth should be to eliminate the bacteria and the contaminated pulp tissue

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from the canal. In the primary teeth, more emphasis is placed on chemical means in conjunction with limited mechanical debridement to disinfect and remove necrotic pulp remnants from inaccessible canals rather than conventional shaping of the canals. Obturating materials with antibacterial and resorbable properties such as ZOE and iodoform containing pastes have been recommended as canal obturants. Non-resorbable materials such as gutta percha and silver points are contraindicated as they will not enhance the primary root physiologic resorptive process. Studies have shown that the general dentists and pedodontists differ in their treatment recommendations (Schorer-Jensma, 2010; Kuin, 2012). Compared with general dentists, pediatric dentists have shown to have a more extensive treatment approach when treating primary teeth (Hanes *et al.*, 1991). Many a times the treatment done remains incomplete either due to the lack of knowledge of the general dentist or due to non-cooperation on the part of the child. This has given rise to increased number of unnecessary extractions of deciduous teeth. It is therefore important that general dental practitioners familiarize themselves with the differences in pulpal treatment and medicaments to be used in primary teeth.

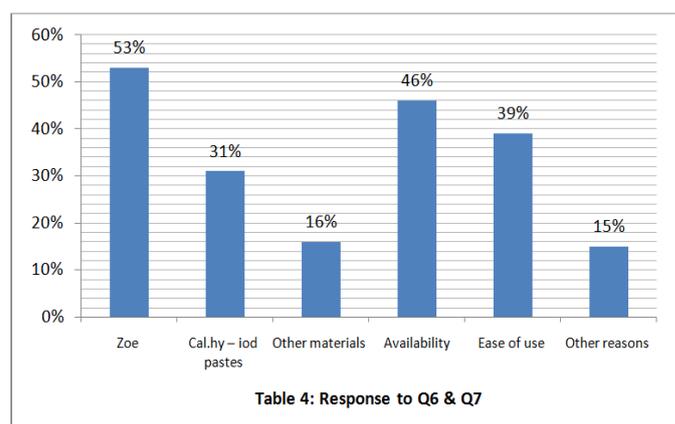
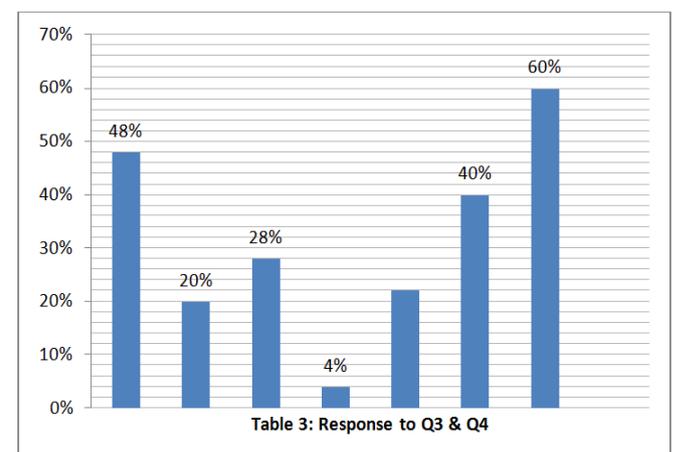
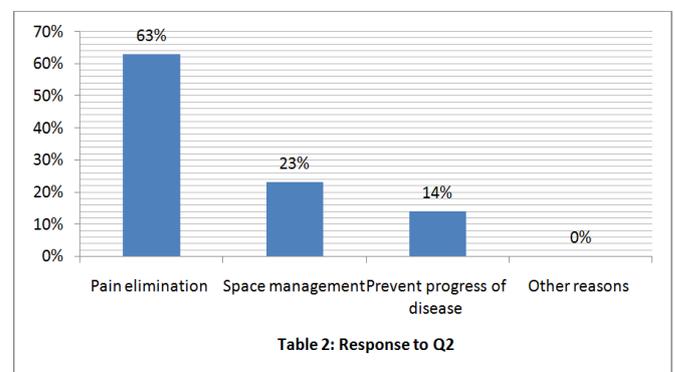
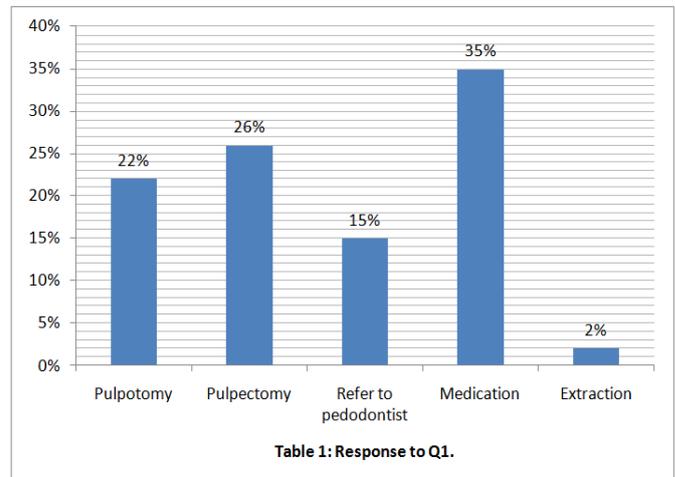
## METHODOLOGY

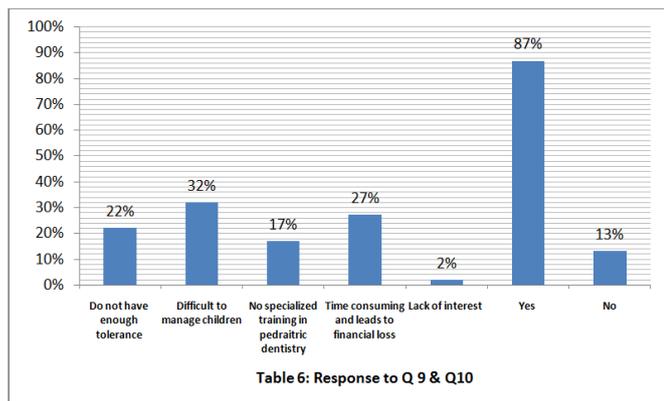
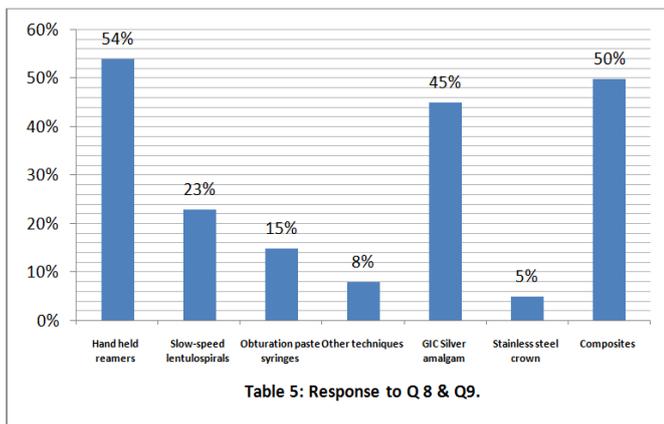
This is a questionnaire based study formulated to determine the knowledge, attitude and practice of general dentists towards endodontic therapy in primary teeth. Pilot study was done among 10 general dentists to check the appropriateness of the questionnaire. The Modified Tagoo *et al.* (2012) questionnaire was used after prior permission. A total of 100 general dental practitioners were selected from various private dental clinics in Srinagar city and were questioned using a 10 item questionnaire. After explaining the purpose of the study questionnaire was distributed among them. And were requested to complete it and submit the next day. Statistical analysis was done using IBM SPSS software version 11.0 and results were obtained.

## RESULTS

In Our Study 22% of the general dentists recommended pulpotomy as the first line of treatment, 26% recommended pulpectomy, 15% referred such cases to Pedodontists, 2% respondents recommended extraction as the first line of treatment, while the majority, 35% prescribed medication only (Table 1). Reason given by the general dentists for performing endodontic treatment in primary teeth was Pain elimination (63%), Space management, (23%) and to Prevent progress of the disease (14%) (Table 2). When asked about the materials used for pulp fixation during a pulpotomy procedure, 48% of the respondents preferred Buckley's formocresol, 28% preferred Gluteraldehyde, 20% used Ferric sulfate and only 4% chose Sodium hypochlorite. Majority (60%) of the participants do not use apex locator for working length determination (Table 3). The most common material used for obturation of deciduous teeth was Zinc oxide eugenol 53%, followed by Calcium hydroxide – iodoform based pastes 31%. Reason given for selecting obturating material after pulpectomy was, availability of the same material (46%), ease of use 39% and other reasons 15% (Table 4). 54% of the dentists used Hand held reamers as obturation technique of deciduous canals, 23%

used Slow-speed lentulospirals, 15% used Obturation paste syringes and 8% used other techniques like applying pressure with cotton pellets.





The final restoration preferred for endodontically treated primary tooth was GIC (35%), Silver amalgam, (15%), Stainless steel crown 25% and Composites 25%. (Table 5) When asked about the barriers faced by the general dentists in treating children, majority 32% reported difficulty in managing children during treatment, 27% reported time consumption and financial loss as a major barrier in treating children whereas 17% reported lack of specialized training in pediatric dentistry and 2% reported lack of interest. Majority (87%) of the general dentists wanted to have additional information regarding pulp therapy in deciduous teeth (Table 6).

## DISCUSSION

Whenever a young patient comes to a dentist with one or more extensively carious primary teeth, it is important to try to provisionally diagnose the likely pulpal status of the tooth concerned, in order to determine the most appropriate treatment. Any treatment plan should be based on a thorough history, examination and appropriate investigations (Woo, 2005). In our study 35% of the participants prescribed medication only and not selecting the right treatment plan. The reason could be the barriers faced by them like difficulty in treating the children. 22% recommended pulpotomy as the first line of treatment, 26% recommended pulpectomy, 15% referred such cases to Pedodontists. This shows that less proportion of the practitioners are aware of the treatment modalities in primary teeth probably due to the reason that treating children is more time consuming and needs patience and hence some of them refer children to pedodontists. 2% respondents recommended extraction as the first line of treatment. Our results were not in agreement with study by Togoo *et al.* (2012). In a study by Woo D *et al* many general dentists failed to recognize the presence or significance of sinus tracts (Woo, 2005).

Reason given by the general dentists in our study for performing endodontic treatment in primary teeth was Pain elimination (63%), Space management, (23%) and to Prevent progress of the disease (14%). Majority of the subjects perform endodontic treatment only for elimination of pain. Early loss of the primary tooth may lead to multiple problems such as loss of space for the permanent tooth to erupt, crowding, ectopic eruption, cross bite formation etc (Keski-Nisula *et al.*, 2008). Inexperience of the dentists as shown by this study, regarding importance of primary teeth may result in a failure to identify the consequence of some conditions. The era of vital-pulp therapy has been greatly enhanced with the introduction of various pulp capping materials. A wide range of materials and techniques, such as formocresol (Alaçam *et al.*, 2009), glutaraldehyde (Adlakha, 2009), ferric sulfate (Huth *et al.*, 2012), zinc oxide-eugenol (Gonzalez, 2016), Ledermix (Seow, 1993), calcium hydroxide (Doyle, 1962), mineral trioxide aggregate (Godhi, 2011), growth factors (Kalaskar, 2004), electrosurgery (Gisoure, 2011), sodium hypochlorite (Vostatek, 2011) and lasers (Gupta *et al.*, 2015), have been used as pulpotomy agents over the years. Majority (48%) of the subjects in this study have been using Buckley's formocresol, 20% use Ferric sulfate 28% use, Glutaraldehyde and 4% use Sodium hypochlorite. Many dental studies have shown some concern regarding using formocresol as a pulp capping agent (Zarzar, 2003; Chandrashekhkar, 2014). The International Agency for Research on Cancer (IARC), evaluating the available literature, concluded that there is sufficient evidence, in animal and human experimentation, to classify formaldehyde as carcinogenic (IARC, 2006). Use of apex locator (40%) for working length was considered less. Sivadas G *et al* conducted a study to verify accuracy of apex locator for root canal length determination of deciduous molars compared to conventional radiograph. Authors found that both apex locator and conventional radiograph to be accurate in working length determination in primary molars (Sivadas, 2013).

The most frequent obturation material used by the dental practitioners in pulpectomy was ZOE 54%, followed by calcium hydroxide paste 31%, remaining 16% used commercially available obturation pastes. Zinc oxide eugenol paste was the first root canal filling material to be recommended for primary teeth, as described by Sweet in 1930 (Sweet, 1930). Success rates were reported by various authors after obturating with ZOE (Barr, 1991; Gould, 1972; Coll, 1985). However, it has certain disadvantages like slow resorption, irritation to the periapical tissues, necrosis of bone and cementum. It has tendency to be retained even after tooth exfoliation. In some cases unresorbed material has been found to cause deflection of the succedaneous tooth (Erasquin, 1967; Spedding, 1985; Ramar, 2010). Many authors suggested, combining calcium hydroxide with iodoform such as vitapex and metapex giving excellent clinical, radiographic and histological results (Gupta, 2011; Nakornchai *et al.*, 2010). Majority of the dentists chose availability (46%) of the material as the reason for selecting the material of choice for obturation. The most frequent technique used for obturation of deciduous canals was Hand held reamers 54% followed by Slow-speed lentulospirals 23%. Very less proportion was found using paste syringes (15%). Bawazir And Salama reported 96% clinical success rate in a group after obturating with slow speed lentulospiral than hand held lentinospiral (Bawazir, 2006). 8% of the general dentists used other techniques like use of wet cotton pellet for pushing the

obturator material into the canals, as was recommended by Hartman and Pruhs (Jha, 2011). Stainless steel crowns have shown a significant clinical success and are considered a favorable final restoration for endodontically treated deciduous tooth (Seale, 2002). Majority of the subjects use GIC (35%) as a final restoration for pulpally treated primary teeth. 25% use composite. Probably due to ease of use and easy availability. 15% still use silver amalgam and 25% use Stainless steel crown. Analysis of the literature, by Randall *et al.* (Randall, 2000) demonstrated evidence of a more favorable outcome for stainless steel crowns than for amalgam restorations in primary molars requiring multisurface restorations.

Among the general dentists who treated child patients, 32% reported difficulty in managing children, 27% reported time consumption and financial loss as a major barrier in treating children whereas 17% reported lack of specialized training in pediatric dentistry and 22% reported lack of tolerance as a barrier in treating child patients. In addition, 2% of the respondents reported lack of interest as barriers in treating children. Table 6 shows the barriers faced by dentists in treating children. Limited pediatric dental education and experience in treating children may have contributed to this result. This is problematic because general dentists see the majority of children. Inexperience in pediatric dentistry may result in conditions going unrecognized or untreated. However, the overall attitude of the subjects in having additional information about pulp therapy in deciduous teeth was positive. 87% of the subjects wanted to have more information regarding pulp therapy in primary teeth.

## REFERENCES

- Adlakha VK *et al.* 2009. A comparative evaluation of hydroxyapatite crystals and glutaraldehyde as agents for pulpotomy in deciduous molars. *Int j clin pediatr dent.*, 2(1):13-22.
- Alaçam A, Odabas ME, Tuzuner T, Silleliog HB, Ozgul Baygın. 2009. Clinical and radiographic outcomes of calcium hydroxide and formocresol pulpotomies performed by dental students. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.*, 108:127-133.
- Barr ES, Flaitz CM, Hicks MJ. 1991. A retrospective radiographic evaluation of primary molar pulpectomies. *Pediatr Dent.*, 13:4-9.
- Bawazir OA, Salama FS. 2006. Clinical evaluation of root canal obturation methods in primary teeth. *Pediatr dent.*, 28(1):39-47
- Chandrashekhar S, Shashidhar J. 2014. Formocresol, still a controversial material for pulpotomy: A critical literature review. *J Res Dent.*, 2:114-24.
- Coll JA, Josell S, Casper JS. 1985. Evaluation of a one-appointment formocresol pulpectomy technique for primary molars. *Pediatr. Dent.*, 7:123-9.
- Doyle WA, MacDonald RE, Mitchell DF. 1962. Formocresol versus calcium hydroxide in pulpotomy. *J Dent Child.*, 29: 29
- Erasquin J, Muruzabal M. 1967. Root canal fillings with zinc oxide Eugenol in the rat molar. *J Oral Surg Oral Med Oral Pathol.*, 24:547-58.
- Gisoure EF. 2011. Comparison of Three Pulpotomy Agents in Primary Molars: A Randomised Clinical Trial. *Iran Endod J.*, 6(1):11-14.
- Godhi B, Sood PB, Sharma A. 2011. Effects of mineral trioxide aggregate and formocresol on vital pulp after pulpotomy of primary molars: An *in vivo* study. *Clin Dent.*, 2(4): 296–301.
- Gonzalez lara A *et al.* Zinc Oxide-Eugenol Pulpotomy in Primary Teeth: A 24-Month Follow-up. *J clin pediatr dent.* 2016;40(2):107-12.
- Gould JM. 1972. Root canal therapy for infected primary molar teeth: Preliminary report. *ASDC J Dent Child.*, 39:269-73.
- Guidelines on pulp therapy for primary and immature permanent teeth. *AAPD* 2009;33(6):212-219.
- Gupta G, Rana V, Chandna P. 2015. Laser Pulpotomy—An Effective Alternative to Conventional Techniques: A 12 Months Clinicoradiographic Study. *Int J Clin Pediatr Dent.*, 8(1):18-21.
- Gupta S, Das S. 2011. Clinical and radiographic evaluation of zinc oxide eugenol and metapex in root canal treatment of primary teeth. *Ind Soc Ped Prev Dent.*, 29(3):222-228.
- Hanes CM, Myers DR, Dushku JC, Barenei JT. 1999. A comparison of general dentists' and pediatric dentists' treatment recommendations for primary teeth. *Pediatr Dent.*, 13:344-8
- Hedge V. 2011. Pediatric Endodontics- Endodontist's view. *Peop J Scient Res.*, 4(1):71-75.
- Huth KC, Khatar NH, Wolf P, Ilie N, Hickel R, Paschos E. 2012. Long-term effectiveness of four pulpotomy techniques: 3-year randomised controlled trial. *Clin Oral Invest.*, 16(4):1243–1250
- IARC, WHO. 2006. IARC classifies formaldehyde as carcinogenic to humans: Press release no.153. Available from: [www.iarc.fr/ENG/Press\\_Releases/archives/pr153a.html](http://www.iarc.fr/ENG/Press_Releases/archives/pr153a.html) [Last accessed on 2006 Mar 13].
- Jha *et al.* 2011. Pediatric obturator materials and technique *J Contemp Dent.*, 1(2):27-32.
- John I Ingle Endodontics 5<sup>th</sup> edition.
- Kalaskar RR, Damle SG. 2004. Comparative evaluation of lyophilised freeze dried platelet derived preparation with calcium hydroxide as pulpotomy agents in primary molars. *J Ind Soc Pedo Prev Dent.*, 22(1)24-29
- Keski-Nisula K, Hernesniemi R, Heiskanen M, Keski-Nisula L, Varrelä J. 2008. Orthodontic intervention in the early mixed dentition: A prospective, controlled study on the effects of the eruption guidance appliance. *Am J Orthod Dentofacial Orthop.*, 133(2):254-60.
- Kuin D *et al.* 2012. Differences in treatment approach between Dutch paediatric dentists and general practitioners, a case control study. *Eur Arch Paediatric Dent.*, 13(1):27-31.
- Marsh SJ, Largent MD. 1967. A Bacteriological Study of The Pulp Canals Of Infected Primary Molars. *J Dent Child.*, 34:460-470.
- Martazavi M, Mesbah M. 2004. Comparison of zinc oxide and eugenol and vitapex for root canal treatment of necrotic primary teeth. *Ped Dent.*, 14(6):417-24.
- Nakornchai S, Banditsing P, Visetratana N. 2010. Clinical evaluation of 3Mix and Vitapex as treatment options for pulpally involved primary molars. *Int J Ped Dent.*, 20:214-221.
- Ramar K, Mungara J. 2010. Clinical and radiographic evaluation of pulpectomies using three root canal filling materials: An in-vivo study. *J Indian Society of Pedodontics and Preventive Dentistry.*, 28:25-9.
- Randall RC, Vrijhoef MM, Wilson NH. 2000. Efficacy of preformed metal crowns vs. amalgam restorations in primary molars: a systematic review. *J Am Dent Assoc.* Mar;131(3):337-43.

- Schorer-Jensma MA *et al.* 2010. A comparison of paediatric dentists and general dental practitioner's care patterns in paediatric dental care. *Eur Arch Paediatr Dent.*, 11(2):93-6.
- Seale NS. 2002. The use of stainless steel crowns. *Pediatr Dent.*, 24(5): 501-505.
- Seow WK, Thong YH. 1993. Evaluation of the novel anti-inflammatory agent tetradrine as a pulpotomy medicament in a canine model. *Pediatr Dent.*, 15:259-66.
- Sivadas G. 2013. Accuracy of apex locator for root canal length determination of deciduous molars compared to conventional radiograph. *J Interdiscip dentistry* 3:163-6.
- Spedding RH. 1985. Incomplete resorption of resorbable zinc oxide root canal filling in primary teeth-report of two cases. *ASDC J Dentistry for Children.*, 52:214-6.
- Sweet, C. 1930. "Procedure for treatment of exposed and pulpless deciduous teeth," *Journal of the American Dental Association*, vol. 17, pp. 1150-1153.
- Togoo RA, Nasim VS, Zakirulla M, Yaseen SM. 2012. Knowledge and practice of pulp therapy in deciduous teeth among general dental practitioners in Saudi Arabia. *Ann Med Health Sci Res.*, 2:119-23.
- Vidya KB, Patil SB, Anegundi RT. 2015. Is pulpotomy obsolete? A clinical study on the success rates of indirect pulp capping and pulpotomy in the treatment of deep dentinal caries in primary second molars. *J int clin dent res organ.* 7:24-9.
- Vostatek SF *et al.* 2011. Sodium hypochlorite pulpotomies in primary teeth: a retrospective assessment. *Pediatr dent.* 33(4):327-32.
- Woo D *et al.* 2005. Dentists and Parents Perceptions of Health, Esthetics, and Treatment of Maxillary Primary Incisors. *Pediatric Dentistry*– 27:1:19-23.
- Zarzar PA, Rosenblatt A, Takahashi CS, Takeuchi PL, Junior LA. 2003. Formocresol mutagenicity following primary tooth pulp therapy: an in vivo study. *J Dent.*, 31:479-485.
3. Materials used for pulp fixation during a pulpotomy procedure  
Buckley's formocresol  
Ferric sulfate  
Gluteraldehyde  
Sodium hypochlorite
4. Is apex locator used for working length determination  
Yes  
No
5. Material used for obturation of deciduous teeth after pulpectomy  
Zinc oxide eugenol  
Calcium hydroxide – iodoform based pastes  
Other materials
6. Reason for selecting your material of choice for obturation  
Availability  
Ease of use  
Other reasons
7. Technique used for obturation of deciduous canals  
Hand held reamers  
Slow-speed lentulospirals  
Obturation paste syringes  
Other techniques
8. Final restoration for endodontically treated deciduous tooth  
GIC  
Silver amalgam  
Stainless steel crown  
Composites
9. Barriers faced by the dentists in treating children  
Do not have enough tolerance  
Difficult to manage children  
No specialized training in pediatric dentistry  
Time consuming and leads to financial loss  
Lack of interest
10. Would you like to have additional information about pulp therapy in deciduous teeth?  
Yes  
No

## QUESTIONNAIRE

1. First line of treatment for a deciduous tooth with pulp exposure :

- Pulpotomy
- Pulpectomy
- Refer to pedodontist
- Medication
- Extraction

2. Reason for performing endodontic treatment in deciduous tooth

- Pain elimination
- Space management
- Prevent progress of disease
- Other reasons

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