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Prevalence of single visit vs multiple visit pulpectomies in children aged between 6-9yrs- a retrospective study.

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ABSTRACT :

Introduction : Pulpectomy is a procedure performed in pediatric dentistry, which involves removal of infected dentin and pulp tissues followed by irrigation and suitable medication to fill the canal. There are 2 methods to perform pulpectomy, either in a single visit or in a multiple visit. However the difference between the two methods arise a need to evaluate the frequented method from the two.

Aim : To study the prevalence of single versus multiple visit pupectomy in children aged 6-9yrs, the gender distribution and associated tooth number.

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Materials and Methodology : Data required for the study was procured from the dental information archiving software. The collected data was sorted and entered in excel. Statistics performed using IBM SPSS software version 23 analysis. The results were interpreted in graphs and tables.

Results : Single visit pulpectomy was found to be greater in prevalence at about 81%. The study shows a male predilection. The association between tooth number and single visit pulpectomy as observed in this study was found that posterior teeth was found to be more frequently associated with single visit pulpectomy which was statistically significant($p<0.05$)

Conclusion : Single visit pulpectomy is a more frequently adapted treatment modality compared to multiple visit pulpectomy, however further clinical studies with greater sample size are required for concrete inferences.

Keywords : pulpectomy; single visit; multiply visit; pediatric patient; medicament; interradicular lesion; management

INTRODUCTION :

Pulpectomy is a clinical procedure in pediatric dentistry, in which the infected pulp tissues are removed followed by placement of suitable medicaments to fill and seal the canals until the tooth undergoes physiological resorption. Pulpectomy is mainly indicated when a primary tooth undergoes necrosis of pulp or has irreversible pulpitis[1]. A pulpectomy in primary teeth is characterised successful owing to the absence of signs and symptoms clinically and radiographically. Moreover, the status of the tooth, its pathological condition and the expertise of the clinician are key factors for the success of pulpectomy in primary teeth [2].

Pulpectomy can be performed either in a single visit or in multiple visits. Some authors opined in past studies that single visit endodontic therapy is better than multiple visits for permanent teeth, however such contemplated conclusions have not been derived with respect to deciduous dentition [3]. Some pediatric dentists prefer to perform a multiple visit pulpectomy so as to ensure thorough sterilization of root canals prior to obturation [4–7]. However, until current times there is not enough supporting evidence to prove which has better efficacy, single visit or multiple visit pulpectomy and the reasons to prefer single or multiple visit pulpectomy also need to be explored [8][9,10][11].

The advantage of single visit pulpectomy is that its procedural steps are simple and it aims of cleaning root canals [12,13]. The protocol for multiple visit pulpectomy needs multiple visits to perform, with each visit involving anaesthesia, absolute isolation and temporary crown and sealing which are subject to loss within the visits. Multiple visit pulpectomies involve more time [14]. Less exposure to radiation and decreased visits are added benefits of single visit pulpectomy [15–17]. Our team has extensive knowledge and research experience that has translate into high quality publications[18–30] [31–37]

The aim of the present study was to estimate the prevalence of single versus multiple visit pupectomies in children aged 6-9yrs, the gender distribution and the reasons for preference of single or multiple visit pulpectomy.

MATERIALS AND METHODOLOGY :

The study was carried out in the department of pediatric dentistry under a university setting. The pros of the study include data availability, similar ethnicity. The cons of the study include the study being unicentric, geographic trends not assessed. The ethical approval was obtained from the Ethical Board of Saveetha University. Data required for the study was procured from the Dental information archiving software(DIAS). Sample was collected from June 2019- February 2021. The sample size of the study was brought to 1125 by simple random sampling. Inclusion criteria were children between 6-9yrs, who had undergone pulpectomy in either single visit or in multiple visits. Exclusion criteria were children aged <6yrs, >9yrs, children who had not undergone pulpectomy procedure. The collected data was assessed for the following parameters :

1. Age - 6 to 9yrs
2. Sex - male/female

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3. Tooth number - anterior/posterior

4. Pulpectomy - single visit/multiple visit

The sorted data was entered in MS Excel and tabulated. Statistics performed using IBM SPSS software version 23. The results were depicted in graphs and tables.

RESULTS :

From the study a greater prevalence of single visit pulpectomy was observed for children aged 6-9yrs compared to multiple visit pulpectomy in children of the same age group. A total of 1405 individuals who had undergone pulpectomy were assessed. From the analysed population, 808 individuals were male and 597 individuals were female. The study shows a male predilection[table 1]. Among the analysed population 1144 patients were found to have undergone single visit pulpectomy,i.e. 81%, while the remaining 19% individuals in this study were found to have undergone pulpectomy in multiple visits[table 2]. From the analysed data the mean age of the study population who underwent single visit pulpectomy was found to be 6yrs[table 3]. From the study it was observed that 70.4% of the posterior teeth had been treated by single visit pulpectomy[table 4].

The association between gender and pulpectomy visits in children about 6-9yrs observed in this study statistically was found to be insignificant. Chi-square analysis revealed p=0.4, for this study[figure 1]. The association between the site of pulpectomy and pulpectomy visits in children about 6-9yrs for this study was found to be statistically not significant, Chi-square analysis revealed p=0.11[figure 2]. The association between the site of pulpectomy and pulpectomy visits in children about 6-9yrs observed in this study statistically was found to be insignificant. Chi-square analysis revealed p=0.00.[figure 3]

Table 1 : Among the analysed population a male predilection was observed for both single visit and multiple visit pulpectomy.

GENDER	PULPECTOMY		TOTAL
	SINGLE VISIT	MULTIVISIT	
FEMALE	660	148	808
MALE	484	113	597

From the analysed population, 808 individuals were male and 597 individuals were female. The study showed a male predilection.

Table 2 : Among the analysed population 1144 patients were found to have undergone single visit pulpectomy,i.e. 81%, while the remaining 19% individuals in this study were found to have undergone pulpectomy in multiple visits.

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	FREQUENCY	PERCENT
SINGLE VISIT	1144	81.4
MULTIVISIT	261	18.6

The table shows that 81% of the analysed population have undergone single visit pulpectomy while 19% of the population have undergone multiple visit pulpectomy.

Table 3 : From the analysed data the mean age of the study population who underwent single visit pulpectomy was found to be 6yrs.

AGE	FREQUENCY	PERCENT
4	3	0.2
5	3	0.2
6	650	46.3
7	406	28.9
8	212	15.1
9	131	9.3

The table shows the mean age of the individuals as observed in this study. 46% of the individuals in this study were found to be 6yrs, followed by 28% of the individuals were 7yrs old, 15% of the individuals 8yrs and 9% of the individuals were 9yrs old.

Table 4 : On analysis from the data, based on associated teeth either anterior or posterior tooth in relation to modality of treatment administered, it was observed that posterior teeth were associated more frequently with single visit pulpectomy.

ASSOCIATED TEETH	PULPECTOMY		TOTAL
	SINGLE VISIT	MULTIVISIT	

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ANTERIOR	154	5	159
POSTERIOR	990	256	1246

The table shows the treatment modality.i.e., single visit or multiple visit done and the associated teeth either anterior or posterior. Posterior teeth were found to be more frequently associated with single visit pulpectomy.

Figure 1 : Bar chart shows the association between gender distribution and modality of pulpectomy as observed in this study.

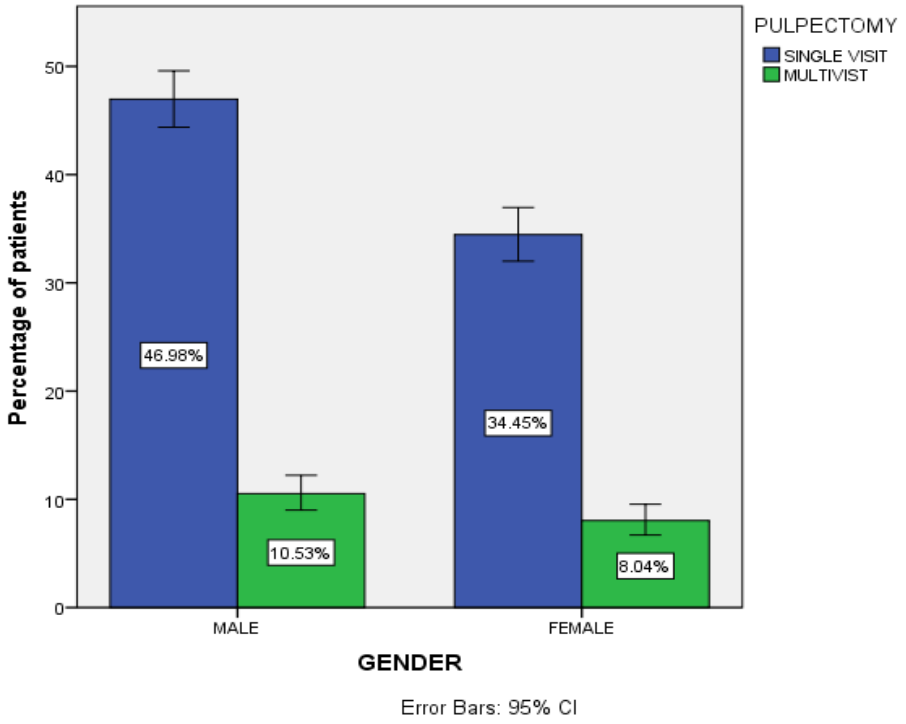

Figure 1 : Bar chart shows the association between gender distribution and modality of pulpectomy as observed in this study. The X axis shows the gender distribution while the Y axis denotes the percentage of individuals who have undergone pulpectomy. The blue bar denotes the percentage of individuals who have undergone single visit pulpectomy. The green bar denotes the percentage of individuals who have undergone multiple visit pulpectomy. The association between gender and pulpectomy visits in children about 6-9yrs observed in this study statistically was found to be insignificant. Chi-square analysis revealed p=0.4, for this study.

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Figure 2 : Bar chart shows the association between the gender distribution and site of pulpectomy as observed in this study.

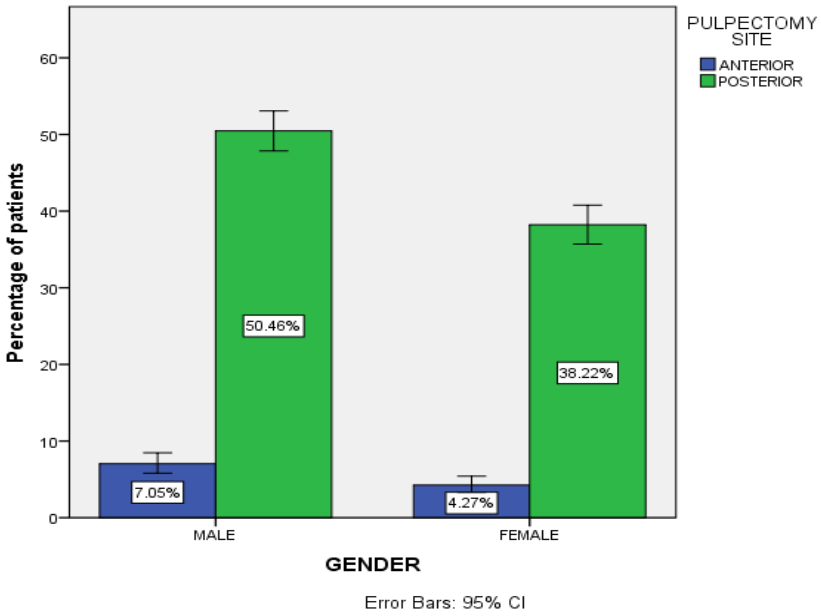

Figure 2 : Bar chart depicts the association between gender distribution and the site of pulpectomy. Xaxis shows the gender distribution, while the Y axis denotes the percentage of individuals who have undergone pulpectomy. The blue bar denotes the percentage of individuals who have undergone pulpectomy in the anterior. The green bar denotes the percentage of individuals who have undergone pulpectomy in the posterior. The association between the site of pulpectomy and pulpectomy visits in children about 6-9yrs for this study was found to be statistically not significant, Chi-square analysis revealed p=0.11.

Figure 3 : Bar chart shows the association between modality of treatment and site of pulpectomy as observed in this study.

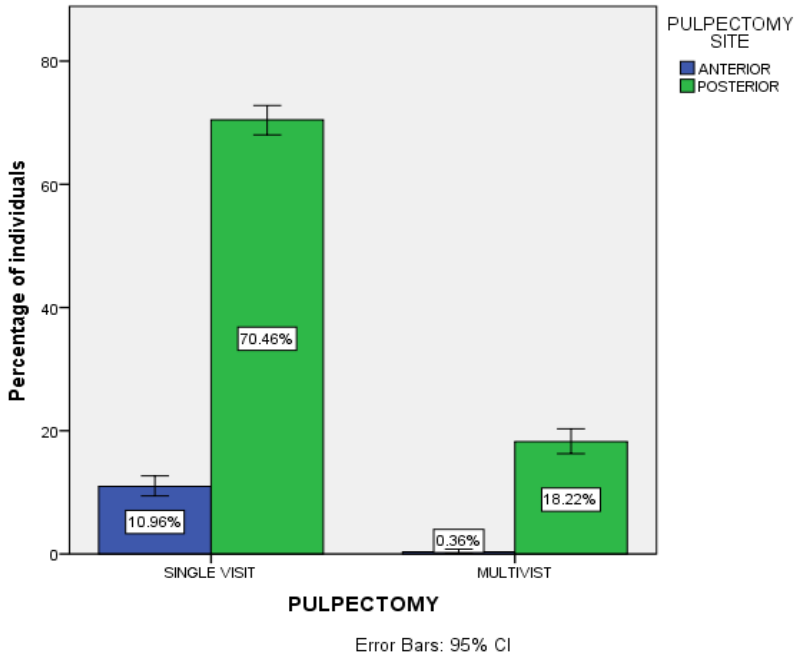

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Figure 3 : Bar chart depicts the association between modality of pulpectomy treatment done vs the site of pulpectomy. Xaxis shows the modality of pulpectomy, single or multi visit, while the Y axis denotes the percentage of individuals who have undergone pulpectomy. The blue bar denotes the percentage of individuals who have undergone pulpectomy in the anterior. The green bar denotes the percentage of individuals who have undergone pulpectomy in the posterior . The association between the site of pulpectomy and pulpectomy visits in children about 6-9yrs observed in this study statistically was found to be insignificant. Chi-square analysis revealed p=0.00.

DISCUSSION :

Dental caries is one of the most common bacterial diseases affecting the human dentition. Pulpectomy is performed in deciduous teeth having irreversibly inflamed and necrotic pulp and helps to retain those teeth in arch until their natural exfoliation time [38,39]. The goal of pulpectomy is to reduce the bacterial count and promote healing of periradicular tissues and fill and seal the canals with an obturating material that will resorb at the rate of resorption of the primary tooth [40,41].

Previous studies have reported that there is no significant difference between single visit and multiple visit pulpectomy procedures in terms of clinical and radiographic assessment [42]. In contrast some authors mentioned that single visit endodontic therapy seems to be efficient in terms of clinical and radiographic assessment compared to multiple visit pulpectomy [43]. However no solid conclusion was put forward and it still stands debatable. This may be attributed to the fact that pediatric dentists generally prefer multiple visit therapy to ensure thorough sterilisation of the root canals prior to obturation [44,45].

Multiple visit pulpectomy involves extirpation of the pulp tissue and placement of intracanal medicament in the first visit followed by obturation in the subsequent visit, if the underlying pathology still persists like the presence of increased infection, periapical abscesses, it may require additional visits [46,47]. Single visit pulpectomy involves extirpation of the pulp tissue and filling the canals, short of apex to a resistance point, after irrigation and final drying the obturation material will be placed in the same visit.

The advantages of single visit pulpectomy in primary teeth are that the involved steps are simple and its procedure aims at cleaning the root canals and completely sealing them without much repeated visits. In the multiple visit pulpectomy, the protocol requires 3-4 visits to perform, subsequently increase in chair time, patient compliance and other risk factors [48].

Based on the previous literature and our findings, single visit pulpectomy is performed and preferred more frequently for children aged 6-9yrs especially for the posterior teeth . However in the circumstances where a multiple visit pulpectomy is a requisite, a multiple visit pulpectomy method must be adopted.

CONCLUSION :

Single visit pulpectomy proves to be the widely preferred treatment modality owing to the various advantages it has compared to multiple visit pulpectomy for both the dentist and patient since it involves less chemical and radiographic exposure as well as physical trauma for the patient.

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REFERENCES :

1. Smaïl-Faugeron V, Glenny A-M, Courson F, Durieux P, Muller-Bolla M, Chabouis HF. Pulp treatment for extensive decay in primary teeth [Internet]. Cochrane Database of Systematic Reviews. 2018. Available from: http://dx.doi.org/10.1002/14651858.cd003220.pub3
2. Figini L, Lodi G, Gorni F, Gagliani M. Single Versus Multiple Visits for Endodontic Treatment of Permanent Teeth: A Cochrane Systematic Review [Internet]. Vol. 34, Journal of Endodontics. 2008. p. 1041–7. Available from: http://dx.doi.org/10.1016/j.joen.2008.06.009
3. Chu C-H, Wong A, Zhang C. A systematic review of nonsurgical single-visit versus multiple-visit endodontic treatment [Internet]. Clinical, Cosmetic and Investigational Dentistry. 2014. p. 45. Available from: http://dx.doi.org/10.2147/ccide.s61487
4. Hargreaves KM. Single-visit more effective than multiple-visit root canal treatment? [Internet]. Vol. 7, Evidence-Based Dentistry. 2006. p. 13–4. Available from: http://dx.doi.org/10.1038/sj.ebd.6400372
5. Ramar K, Mungara J. Clinical and radiographic evaluation of pulpectomies using three root canal filling materials: Anin-vivostudy [Internet]. Vol. 28, Journal of Indian Society of Pedodontics and Preventive Dentistry. 2010. p. 25. Available from: http://dx.doi.org/10.4103/0970-4388.60481
6. Reddy S, Ramakrishna Y. Evaluation of Antimicrobial Efficacy of Various Root Canal Filling Materials Used in Primary Teeth: A Microbiological Study [Internet]. Vol. 31, Journal of Clinical Pediatric Dentistry. 2007. p. 193–8. Available from: http://dx.doi.org/10.17796/jcpd.31.3.t73r4061424j2578
7. Saxena A, Koul M, Grover SD. An in vivo Evaluation of Root Canal Filling Materials used in Primary Teeth [Internet]. Vol. 5, International Journal of Oral Care & Research. 2017. p. 196–201. Available from: http://dx.doi.org/10.5005/jp-journals-10051-0096
8. Moher D, PRISMA-P Group, Shamseer L, Clarke M, Ghersi D, Liberati A, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement [Internet]. Vol. 4, Systematic Reviews. 2015. Available from: http://dx.doi.org/10.1186/2046-4053-4-1
9. Dutta S, Singla R. Single Visit versus Multiple Visit Root Canal Therapy [Internet]. Vol. 1, International Journal of Clinical Pediatric Dentistry. 2008. p. 17–24. Available from: http://dx.doi.org/10.5005/jp-journals-10005-1004
10. Garg A, Singh S. Incidence of post-operative pain after single visit and multiple visit root canal treatment: A randomized controlled trial [Internet]. Vol. 15, Journal of Conservative Dentistry. 2012. p. 323. Available from: http://dx.doi.org/10.4103/0972-0707.101888
11. Triches TC, de Figueiredo LC, Feres M, de Freitas SFT, Zimmermann GS, Cordeiro MMR. Microbial Reduction by Two Chemical-Mechanical Protocols in Primary Teeth with Pulp Necrosis and Periradicular Lesion - An In Vivo Study [Internet]. Vol. 25, Brazilian Dental Journal. 2014. p. 307–13. Available from: http://dx.doi.org/10.1590/0103-6440201302416
12. Mandroli P, Bharuka S. Single- versus two-visit pulpectomy treatment in primary teeth with apical periodontitis: A double-blind, parallel group, randomized controlled trial [Internet]. Vol. 34, Journal of Indian Society of Pedodontics and Preventive Dentistry. 2016. p. 383. Available from: http://dx.doi.org/10.4103/0970-4388.191429
13. Paredes-Vieyra J, Enriquez FJJ. Success Rate of Single- versus Two-visit Root Canal Treatment of Teeth with Apical Periodontitis: A Randomized Controlled Trial [Internet]. Vol. 38, Journal of Endodontics. 2012. p. 1164–9. Available from: http://dx.doi.org/10.1016/j.joen.2012.05.021
14. Gesi A, Hakeberg M, Warfvinge J, Bergenholtz G. Incidence of periapical lesions and clinical symptoms after pulpectomy—A clinical and radiographic evaluation of 1- versus 2-session treatment [Internet]. Vol. 101, Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2006. p. 379–88. Available from:

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http://dx.doi.org/10.1016/j.tripleo.2005.05.073

15. Sevekar SA. Postoperative Pain and Flare-Ups: Comparison of Incidence Between Single and Multiple Visit Pulpectomy in Primary Molars [Internet]. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2017. Available from: http://dx.doi.org/10.7860/jcdr/2017/22662.9377
16. Manrique PC, Castillo-Cabezudo EM. Comment on "Postoperative Pain and Flare-Ups: Comparison of Incidence between Single and Multiple Visit Pulpectomy in Primary Molars" [Internet]. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2018. Available from: http://dx.doi.org/10.7860/jcdr/2018/31365.11100
17. Oginni AO, Udoye CI. Endodontic flare-ups: comparison of incidence between single and multiple visit procedures in patients attending a Nigerian teaching hospital [Internet]. Vol. 4, BMC Oral Health. 2004. Available from: http://dx.doi.org/10.1186/1472-6831-4-4
18. Subramanyam D, Gurunathan D, Gaayathri R, Vishnu Priya V. Comparative evaluation of salivary malondialdehyde levels as a marker of lipid peroxidation in early childhood caries. Eur J Dent. 2018 Jan;12(1):67–70.
19. Ramadurai N, Gurunathan D, Samuel AV, Subramanian E, Rodrigues SJL. Effectiveness of 2% Articaine as an anesthetic agent in children: randomized controlled trial. Clin Oral Investig. 2019 Sep;23(9):3543–50.
20. Ramakrishnan M, Dhanalakshmi R, Subramanian EMG. Survival rate of different fixed posterior space maintainers used in Paediatric Dentistry – A systematic review [Internet]. Vol. 31, The Saudi Dental Journal. 2019. p. 165–72. Available from: http://dx.doi.org/10.1016/j.sdentj.2019.02.037
21. Jeevanandan G, Thomas E. Volumetric analysis of hand, reciprocating and rotary instrumentation techniques in primary molars using spiral computed tomography: An in vitro comparative study. Eur J Dent. 2018 Jan;12(1):21–6.
22. Princeton B, Santhakumar P, Prathap L. Awareness on Preventive Measures taken by Health Care Professionals Attending COVID-19 Patients among Dental Students. Eur J Dent. 2020 Dec;14(S 01):S105–9.
23. Saravanakumar K, Park S, Mariadoss AVA, Sathiyaseelan A, Veeraraghavan VP, Kim S, et al. Chemical composition, antioxidant, and anti-diabetic activities of ethyl acetate fraction of Stachys riederi var. japonica (Miq.) in streptozotocin-induced type 2 diabetic mice. Food Chem Toxicol. 2021 Jun 26;155:112374.
24. Wei W, Li R, Liu Q, Devanathadesikan Seshadri V, Veeraraghavan VP, Surapaneni KM, et al. Amelioration of oxidative stress, inflammation and tumor promotion by Tin oxide-Sodium alginate-Polyethylene glycol-Allyl isothiocyanate nanocomposites on the 1,2-Dimethylhydrazine induced colon carcinogenesis in rats. Arabian Journal of Chemistry. 2021 Aug 1;14(8):103238.
25. Gothandam K, Ganesan VS, Ayyasamy T, Ramalingam S. Antioxidant potential of theaflavin ameliorates the activities of key enzymes of glucose metabolism in high fat diet and streptozotocin - induced diabetic rats. Redox Rep. 2019 Dec;24(1):41–50.
26. Su P, Veeraraghavan VP, Krishna Mohan S, Lu W. A ginger derivative, zingerone-a phenolic compound-induces ROS-mediated apoptosis in colon cancer cells (HCT-116). J Biochem Mol Toxicol. 2019 Dec;33(12):e22403.
27. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of Streptococcus mutans, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: randomized controlled trial [Internet]. Vol. 24, Clinical Oral Investigations. 2020. p. 3275–80. Available from: http://dx.doi.org/10.1007/s00784-020-03204-9
28. Sekar D, Johnson J, Biruntha M, Lakhmanan G, Gurunathan D, Ross K. Biological and Clinical Relevance of microRNAs in Mitochondrial Diseases/Dysfunctions. DNA Cell Biol. 2020 Aug;39(8):1379–84.
29. Velusamy R, Sakthinathan G, Vignesh R, Kumarasamy A, Sathishkumar D, Nithya Priya K, et al. Tribological and thermal characterization of electron beam physical vapor deposited single layer thin film for TBC application. Surf Topogr: Metrol Prop. 2021 Jun 24;9(2):025043.
30. Aldhuwayhi S, Mallineni SK, Sakhamuri S, Thakare AA, Mallineni S, Sajja R, et al. Covid-19 Knowledge and Perceptions Among Dental Specialists: A Cross-Sectional Online Questionnaire Survey. Risk Manag Healthc Policy. 2021 Jul 7;14:2851–61.
31. Sekar D, Nallaswamy D, Lakshmanan G. Decoding the functional role of long noncoding RNAs (lncRNAs) in hypertension progression. Hypertens Res. 2020 Jul;43(7):724–5.
32. Bai L, Li J, Panagal M, M B, Sekar D. Methylation dependent microRNA 1285-5p and sterol carrier proteins 2 in type 2 diabetes mellitus. Artif Cells Nanomed Biotechnol. 2019 Dec;47(1):3417–22.

ISSN: 2309-5288(Print)/2309-6152(Online)
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Article History: Received: 02 January 2022, Revised: 10 February 2022, Accepted: 21 February 2022, Publication: 31 March 2022

33. Sekar D. Circular RNA: a new biomarker for different types of hypertension. Hypertens Res. 2019 Nov;42(11):1824–5.
34. Sekar D, Mani P, Biruntha M, Sivagurunathan P, Karthigeyan M. Dissecting the functional role of microRNA 21 in osteosarcoma. Cancer Gene Ther. 2019 Jul;26(7-8):179–82.
35. Duraisamy R, Krishnan CS, Ramasubramanian H, Sampathkumar J, Mariappan S, Navarasampatti Sivaprakasam A. Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments. Implant Dent. 2019 Jun;28(3):289–95.
36. Parimelazhagan R, Umapathy D, Sivakamasundari IR, Sethupathy S, Ali D, Kunka Mohanram R, et al. Association between Tumor Prognosis Marker Visfatin and Proinflammatory Cytokines in Hypertensive Patients. Biomed Res Int. 2021 Mar 16;2021:8568926.
37. Syed MH, Gnanakkan A, Pitchiah S. Exploration of acute toxicity, analgesic, anti-inflammatory, and anti-pyretic activities of the black tunicate, Phallusia nigra (Savigny, 1816) using mice model. Environ Sci Pollut Res Int. 2021 Feb;28(5):5809–21.
38. Tirupathi SP, Krishna N, Rajasekhar S, Nuvvula S. Clinical Efficacy of Single-visit Pulpectomy over Multiple-visit Pulpectomy in Primary Teeth: A Systematic Review. Int J Clin Pediatr Dent. 2019 Sep;12(5):453–9.
39. Fuks A, Peretz B. Pediatric Endodontics: Current Concepts in Pulp Therapy for Primary and Young Permanent Teeth. Springer; 2016. 164 p.
40. Winters J, Cameron AC, Widmer RP. Pulp therapy for primary and immature permanent teeth [Internet]. Handbook of Pediatric Dentistry. 2013. p. 103–22. Available from: http://dx.doi.org/10.1016/b978-0-7234-3695-9.00007-9
41. Moghadam FJ, Jahani Moghadam F. Pulp Therapy for Primary and Immature Permanent Teeth in Children: Review of Literature [Internet]. Vol. 10, Iranian Journal of Pediatric Dentistry. 2015. p. 96–106. Available from: http://dx.doi.org/10.29252/ijpd.10.2.96
42. Molander A, Warfvinge J, Reit C, Kvist T. Clinical and radiographic evaluation of one- and two-visit endodontic treatment of asymptomatic necrotic teeth with apical periodontitis: a randomized clinical trial. J Endod. 2007 Oct;33(10):1145–8.
43. Wang C, Xu P, Ren L, Dong G, Ye L. Comparison of post-obturation pain experience following one-visit and two-visit root canal treatment on teeth with vital pulps: a randomized controlled trial. Int Endod J. 2010 Aug;43(8):692–7.
44. Sruthi MA, Ravindran V. An Observational Study on the Materials and Techniques Commonly Adopted by Pediatric Dentists for Single Visit Pulpectomy [Internet]. Vol. 11, International Journal of Research in Pharmaceutical Sciences. 2020. p. 1574–80. Available from: http://dx.doi.org/10.26452/ijrps.v11ispl3.3478
45. Patel B, Choudhari S, Goyal S, Patel C, Waghela S. Clinical and radiographical evaluation of single- versus multiple-visit pulpectomy treatment in primary teeth with apical periodontitis [Internet]. Vol. 12, Indian Journal of Dental Sciences. 2020. p. 225. Available from: http://dx.doi.org/10.4103/ijds.ijds_34_20
46. Soleiman BN, Nazemi Soleiman B, Basir Shabestari S, Kalantari M. Pulp Therapy for Primary and Immature Permanent Teeth in Children: Review of Literature [Internet]. Vol. 10, Iranian Journal of Pediatric Dentistry. 2015. p. 107–16. Available from: http://dx.doi.org/10.29252/ijpd.10.2.107
47. Ranly DM, Garcia-Godoy F. Current and potential pulp therapies for primary and young permanent teeth [Internet]. Vol. 28, Journal of Dentistry. 2000. p. 153–61. Available from: http://dx.doi.org/10.1016/s0300-5712(99)00065-2
48. Srivastava V. Endodontic Therapy in Primary and Young Permanent Teeth [Internet]. Modern Pediatric Dentistry. 2011. p. 209–209. Available from: http://dx.doi.org/10.5005/jp/books/11297_26