Type of study: A Retrospective study

Patients Reporting on Appointment Date After Access Opening For Further Treatment to Dental Hospital - A Cross Sectional Study

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Abstract

Failure to keep dental appointments is one of the problems affecting the outcome of treatment. Keeping dental appointments enhances patient care while failure to keep appointments can result in poor prognosis, economic cost and patient care disruption.The aim of the present study was to evaluate the number of patients reporting on appointment date after access opening for further treatment to dental hospital. 4490 met inclusion criteria, only 981 patients reported on the given appointment date. Data was tabulated into excel sheets. Then data was analyzed using SPSS software(23.0 version). Statistical analysis of the material was performed using Chi square test. Number of patients reported to the hospital on the appointment date were only 27.3% (1225) patients, 72.7% (3265) of patients did not report back on the given appointment date. In the present study 1225 patients reported for further treatment, 488 patients of 18-30 age group reported back for further treatment, more number of male patients(665) reported back for further treatment, more number of patients (132) with complaints in relation to 36,46 reported back for further treatment.Failure to keep dental appointments was high in the present study. Being busy with other activities and long distance were some reasons for failed appointments.

Keywords:- *Access opening; Appointments and schedules; Failure of treatment; Obturation; Patient compliance*

Introduction

Failure to keep dental appointments is one of the problems affecting management of patients. Keeping appointments enhances patient care while failure to keep appointments can result in poor prognosis, economic cost and patient care disruption [1].Patients failure to keep appointment has been attributed to various factors which include lack of time[2], gender, age, proximity of oral health centre[3], difficulty in transportation[3], forgetfulness[4], longer intervals between appointments, effective communication or doctor-patient relationship, religious reasons [3], cost[5]and fear[6]. Failure to attend follow up dental visits was higher in rural settings [7] than in urban settings. It also occurred more in paediatric patients [8], male[8,9], patients with multiple dental treatments[10], those from low socioeconomic background [11] and patients attending private dental clinics [8,9]. Sending SMS and text messages [12,13,14] ,educating new patients[15], providing transportation[16], and giving patients detailed information two weeks before their appointment[17] are some of the methods employed to reduce dental appointment failure. Long waiting time and previous defaulters have been shown to be the predictors of failed dental appointments[17,18].Access cavity preparation is defined as an endodontic coronal preparation which enables unobstructed access to the coronal orifice, a straight line access to apical foramen, complete control

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over instrumentation and to accommodate obturation technique [19].Patient visit to endodontist or general practitioner mostly due to tooth pain(mostly endodontic pain). In case of emergency practitioners have to perform access cavity preparation to relieve pain, once pain is relieved then the patient doesn't report to the practitioner on the given appointment date it leads to failure of the treatment after some time.Dental students and dentists are affected by the inability of patients to keep their appointments. Students have less number of patients to treat, meet clinical requirements in college while dentists have less number of patients to treat, which eventually impacts negatively on their academic progress[8,9].There is currently no study in India which evaluated the dental appointments status of patients.

The aim of the present study was to evaluate the number of patients reporting on appointment date after access opening for further treatment to dental hospital.

Material and Methods

This retrospective study included patients who attended teaching dental hospital from June 2019 - March 2020. This study was approved by the Institutional Review Board.

Inclusion Criteria - Patients above 18 years of age, patients who visited during a particular time period from June 2019 - March 2020 and patients complaining of tooth pain.

Exclusion Criteria - Patients below 18 years of age, patients who did not visit during a particular time period from June 2019 - March 2020 and patients who reported to hospital with any other complaint. Data of the patients who have undergone access opening, their appointment dates and patients who visited on a given appointment date was collected from case records. Out of 5,013 patients 4490 met inclusion criteria, only 981 patients reported on the given appointment date. Data was tabulated into excel sheets under headings age,gender,teeth no, patients reported on appointment date. Then data was analyzed using SPSS software(23.0 version). Statistical analysis of the material was performed using the chi square test. In the study group Number of patients reported to the hospital on appointment date only 27.3% (1225)of patients reported on given appointment dates, 72.7% (3265) of patients did not report back on given appointment date(Fig 1), 38.9% (1746) of included cases were 18-30 years age group, 29%(1746) were 31- 40 years age group, 18.8%(846) were 41-50 years age group, 9.2%(413) were 51-60 years age group and 4.1%(183) were above 60 years of age. Out of which 1225 patients reported for further treatment, 488 patients of 18- 30 age group reported back for further treatment and the results were statistically not significant($P>0.05$,) (Fig.2). In the present study 52.6%(2362) were male patients and 47.4%(2128) female patients, more number of male patients(665) reported back for further treatment and the results were statistically not significant($P>0.05$) (Fig.3). Teeth most commonly undergone access opening were 36,46 - 10.1%(454) followed by 16,26 - 6.6% - 6.9%,(308) least commonly involved were 18,38,48 - 0%(0) - 0.1% (1) followed by 33 - 0.6%(25). More number of patients (132) with complaint in relation to 36,46 reported back for further treatment and the results were statistically significant($P<0.05$)(Fig 4).

Result and Discussion

According to the data evaluated, a total of 5,013 patients visited dental hospital during the selected time period. Only 4490 met the inclusion criteria out of which only 981 patients reported back on the given appointment date. Statistical analysis of the material was performed using the chi square test. Number of patients reported to the hospital on appointment date only 27.3% (1225)of patients reported on given appointment dates, 72.7% (3265)of patients did not report back on given appointment date(Fig 1), Approximately 38.9% (1746) of included cases were 18-30 years age group, 29%(1746) were 31- 40 years age group, 18.8%(846) were 41-50 years age group, 9.2%(413) were 51-60 years age group and 4.1%(183) were above 60 years of age. Out of which 1225 patients reported for further treatment 488 patients of 18- 30 age group reported back for further treatment and the results were statistically not significant($P>0.05$,) (Fig.2). In the present study 52.6%(2362) were male patients and 47.4%(2128) female patients, more number of male patients(665) reported back for further treatment and the results were statistically not significant($P>0.05$) (Fig.3). Teeth most commonly undergone access opening were 36,46 - 10.1%(454) followed by 16,26 - 6.6% - 6.9%,(308) least commonly involved were 18,38,48 - 0%(0) - 0.1% (1) followed by 33 - 0.6%(25). More number of patients (132) with complaint in relation to

36,46 reported back for further treatment and the results were statistically significant(P<0.05)(Fig 4).

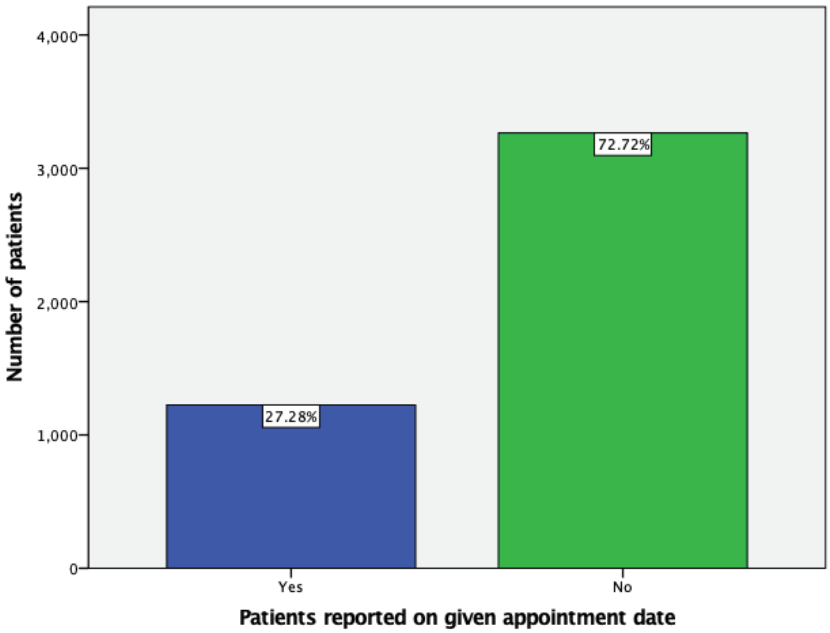

Fig.1: Depicts frequency and percentage distribution of number of patients reported on given appointment date. X axis denotes whether patients reporting on given appointment date and Y axis denotes number of patients, Yes (Blue colour), No (Green colour). 27.3% (1225) of patients reported on given appointment dates, 72.7% (3265)of patients did not report back on the given appointment date.

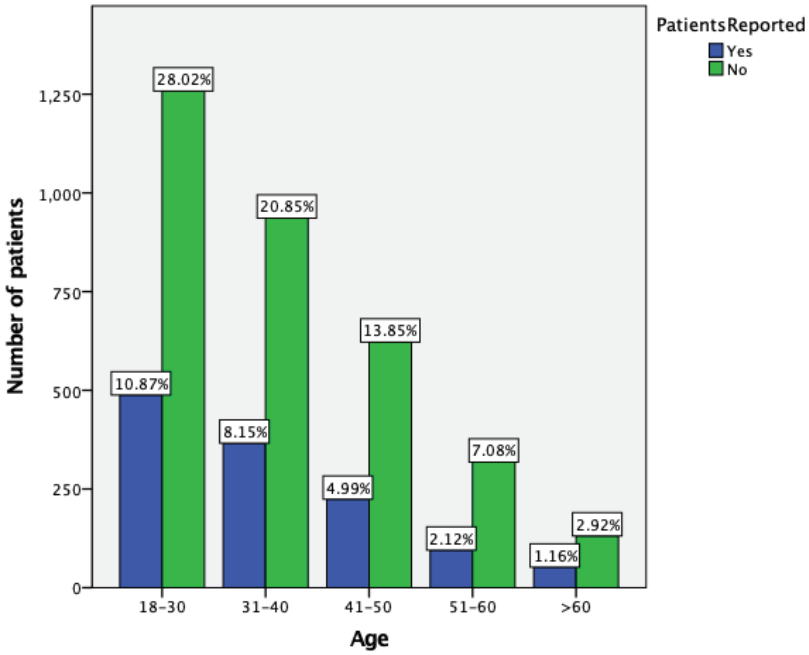

Figure 2: Bar graph shows association between age of patients and number of patients. X axis denotes age and Y axis denotes number of patients. Yes (Blue colour), No (Green colour), More number (10.87%) of 18-30 age group patients reported back for further treatment compared to other age groups. There was no significant difference between different age group patients reported on the given appointment date, chi square test p = 0.282 (p>0.05).

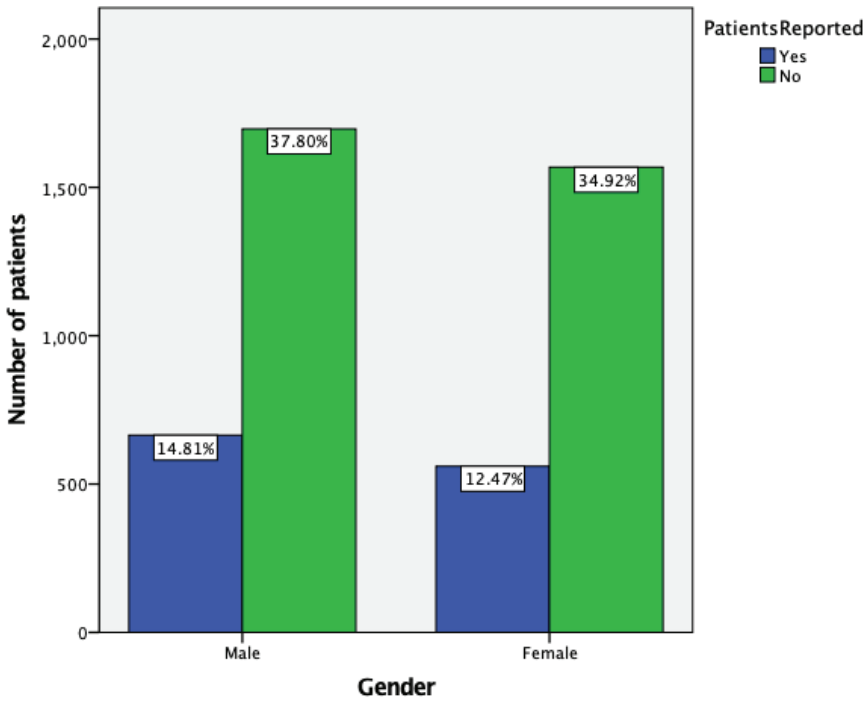

Figure 3: Bar graph shows association between gender of patients and number of patients. X axis denotes gender of patients and Y axis denotes number of patients. Yes (Blue colour), No (Green colour), More number of male patients(14.8%) reported back for further treatment as compared to female patients(12.4%).There was no significant difference between the gender of the patients, chi square test p = 0.89 (p>0.05).

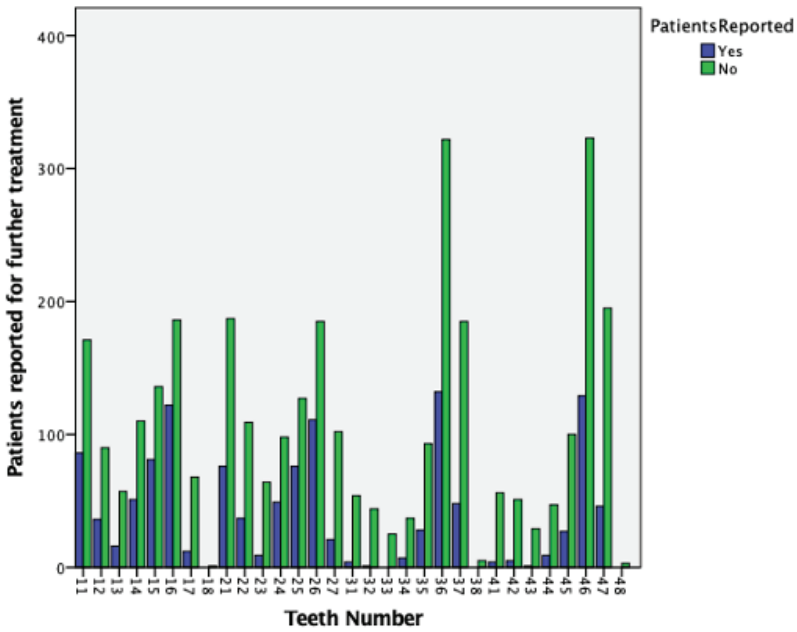

Figure 4: Bar graph shows association between teeth number and number of patients. X axis denotes teeth number and Y axis denotes patients reported for further treatment. Yes (Blue colour), No (Green colour), More number of patients (5.8%) with complaint in relation to 36,46 reported back for further treatment. There was a significant difference, chi square test p = 0.00 (p<0.05).

The aim of endodontic treatment is thorough debridement, cleaning and shaping of the root canal. So the space can be filled with an inert material thus preventing or minimizing any chances of reinfection. However, failure ensues when the endodontic treatment falls short of the standard clinical principles [20,21]. If the patient doesn't visit on given appointment date it may lead to failure of the treatment due to persistence of bacteria (intra-canal and extra-canal) , improper coronal seal (leakage), untreated canals (both major and accessory) and poor access cavity design [22].

One of the foremost causes of endodontic failure is persistent microbiological infection[20,23].The role of bacteria in periradicular infection has been well established in literature and endodontic treatment will be afflicted with a higher chance of failure if microorganisms persist in the canals at the time of root canal obturation [24,25]. Bacteria harbored in root canal areas such as isthmuses, dentinal tubules and ramifications may evade disinfectants [24,26]. A study performed by Lin *et al*. on 236 cases of endodontic treatment failures found a correlation between the presence of bacterial infection in the canals and periradicular rarefaction in endodontic failures [27,28,29].Bacteria present in the periradicular area will be inaccessible to disinfection procedures. Canals with negative cultures for bacteria are said to have higher success rates as opposed to those canals which test positive [30,31]. A well sealing coronal restoration is essential after the completion of obturation as it would prevent the ingress of any microorganisms, which are present in the ambient environment [32].Swanson and Madison [32,33] in their study stated coronal leakage should be considered as a potential factor resulting in endodontic failure. The importance of a good quality coronal restoration was also emphasized by Ray and Trope in their study[34] and later, their work was replicated by another retrospective study performed on 1001 endodontically treated teeth [34,35]. The results of this latter study showed that success rates of the teeth with poor quality coronal restorations fell in contrast to teeth with good quality obturation and coronal restorations [19,36]. However the main factor in the success of the root canal was proved to be the quality of the obturation in this study rather than the quality of the coronal restoration [37,28]. An impervious seal at the coronal area is important for a successful prognosis of endodontically treated teeth. Ng *et al*., in their meta analysis stated that the pooled success rate for teeth which have satisfactory restorations is higher than those teeth which have poor quality restorations[38]. Due temporary filling after access cavity preparation there might be ingress of bacteria.

It is not an uncommon practice to miss a canal while carrying out endodontic treatment especially in molar teeth where one root, one canal formula is frequently overruled by the fact that the number of canals is more than the number of roots [21,39]. Moreover, inadequate access opening makes it difficult for the primary dentist to locate the supplemental canals. The inability to treat all the canals is one of the causes leading to endodontic failure [40,31,41]. Bacteria residing in untreated canals lead to the persistence of symptoms. The results of one study carried out on 5616 molars showed that failure to locate the MB2 canal had resulted in a significant decrease in the long-term prognosis of those teeth[38,42]. In another prospective study carried out by Hoen and Pink[43],the incidence of missed canals were reported to be 42% of all the 1100 endodontically failing teeth. Untreated canals after access opening leads to failure of treatment.Poor access cavity design reduces the amount of dentin[44],decreases the fracture strength of teeth and increases cuspal deflection during function. The loss of dentin and anatomic structures, such as cusps,ridges and pulp chamber roof can result in fracture of the tooth after the temporary filling[45].No shows for scheduled appointments are a frequent occurrence, creating unused appointment slots, reducing patient quality of care and access to service, while increasing loss to follow up and medical cost. The study was conducted to evaluate the number of patient's visited on their given appointment date for further treatment. In our study the percentage of missed appointments was found to be 72.7% which is higher than 24.8% reported in a study conducted in Riyadh, Saudi arabia[46]. In our study 72% of 18 - 30 years age groups were highest and missed the appointment due to school or work. In our study 71.8% of males found to miss appointments due to work. These numbers are similar to study that suggested males having higher missed appointment frequency. 71.1% of patients with complaints of pain in relation to 36,46 missed appointments.In dental practice, missing appointments can disrupt the patient treatment to a large extent for example if the patient undergoing endodontic treatment does not report after access opening it may lead to apical periodontitis and granuloma after some time. If

there is prolonged infection it may be life threatening and it may progress into cellulitis and ludwig's angina. Therefore, to control missed appointments, the dentist must educate the patients on their first visit and cautiously communicate the importance of maintaining the appointment's schedule and its effect on treatment outcome. The patients should also be told how and when they can inform the clinic in case they were unable to make their appointments..Future studies should focus on the method that can reduce or eliminate missed and canceled appointments and encourage patients to report on appointment dates in order to enhance the treatment outcome in addition to improving the economics and quality of dental practice.

Conclusion

Failure to keep dental appointments was high in the present study. Being busy with other activities and long distance were some reasons for failed appointments.To control missed appointments, the dentist must educate the patients on their first visit regarding the importance of maintaining the appointments schedule and its effect on treatment outcome. The patients should also be told how and when they can inform the clinic in case they were unable to make their appointments.

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Ethical Clearance: It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/SIHEC/2020/DIASDATA/0619-0320)

References

1. Lee VJ, Earnest A, Chen MI, Krishnan B. Predictors of failed attendances in a multi-specialty outpatient centre using electronic databases [Internet]. Vol. 5, BMC Health Services Research. 2005. Available from: http://dx.doi.org/10.1186/1472-6963-5-51
2. Joshi N, George A, Hoshing A. A study of the reasons for irregular dental attendance in a private dental college in a rural setup [Internet]. Vol. 18, Indian Journal of Dental Research. 2007. p. 78. Available from: http://dx.doi.org/10.4103/0970-9290.32425
3. Albarakati SF. Appointments failure among female patients at a dental school clinic in Saudi Arabia. J Dent Educ. 2009 Sep;73(9):1118–24.
4. al-Shammari SA. Failures to keep primary care appointments in Saudi Arabia. Fam Pract Res J. 1992 Jun;12(2):171–6.
5. Gurdal P, Cankaya H, Onem E, Dincer S, Yilmaz T. Factors of patient satisfaction/dissatisfaction in a dental faculty outpatient clinic in Turkey [Internet]. Vol. 28, Community Dentistry and Oral Epidemiology. 2000. p. 461–9. Available from: http://dx.doi.org/10.1034/j.1600-0528.2000.028006461.x
6. Kadi G, Massotto M. Handling broken appointments, low case acceptance, and high stress through patient education. Dent Today. 2002 Oct;21(10):132–5.
7. Lalloo R, McDonald JM. Appointment attendance at a remote rural dental training facility in Australia [Internet]. Vol. 13, BMC Oral Health. 2013. Available from: http://dx.doi.org/10.1186/1472-6831-13-36
8. Rodd HD, Clark EL, Stern MR, Baker SR. Failed attendances at hospital dental clinics among young patients with cleft lip and palate. Cleft Palate Craniofac J. 2007 Jan;44(1):92–4.
9. Awartani F. Broken Appointment Behavior in a Dental School Enviornment [Internet]. Vol. 4, The Journal of Contemporary Dental Practice. 2003. p. 100–7. Available from: http://dx.doi.org/10.5005/jcdp-4-4-100
10. Wang NJ, Aspelund GØ. Children who break dental appointments [Internet]. Vol. 10, European Archives of Paediatric Dentistry. 2009. p. 11–4. Available from: http://dx.doi.org/10.1007/bf03262660
11. Nguyen DL, DeJesus RS, Wieland ML. Missed Appointments in Resident Continuity Clinic: Patient Characteristics and Health Care Outcomes [Internet]. Vol. 3, Journal of Graduate Medical Education. 2011. p. 350–5. Available from: http://dx.doi.org/10.4300/jgme-d-10-00199.1
12. Perry JGW. A preliminary investigation into the effect of the use of the Short Message Service (SMS) on patient attendance at an NHS Dental Access Centre in Scotland. Prim Dent Care. 2011 Oct;18(4):145–9.

13. Fairhurst K, Sheikh A. Texting appointment reminders to repeated non-attenders in primary care: randomised controlled study. Qual Saf Health Care. 2008 Oct;17(5):373–6.

14. Can S, Macfarlane T, O'Brien KD. The use of postal reminders to reduce non-attendance at an orthodontic clinic: A randomised controlled trial [Internet]. Vol. 195, British Dental Journal. 2003. p. 199–201. Available from: http://dx.doi.org/10.1038/sj.bdj.4810443

15. Macharia WM. An Overview of Interventions to Improve Compliance With Appointment Keeping for Medical Services [Internet]. Vol. 267, JAMA: The Journal of the American Medical Association. 1992. p. 1813. Available from: http://dx.doi.org/10.1001/jama.1992.03480130129038

16. Smith CM, Yawn BP. Factors associated with appointment keeping in a family practice residency clinic. J Fam Pract. 1994 Jan;38(1):25–9.

17. Hardy KJ, O'Brien SV, Furlong NJ. Information given to patients before appointments and its effect on non-attendance rate. BMJ. 2001 Dec 1;323(7324):1298–300.

18. Dickey W, Morrow JI. Can outpatient non-attendance be predicted from the referral letter? An audit of default at neurology clinics. J R Soc Med. 1991 Nov;84(11):662–3.

19. Janani K, Palanivelu A, Sandhya R. Diagnostic accuracy of dental pulse oximeter with customized sensor holder, thermal test and electric pulp test for the evaluation of pulp vitality - An in vivo study [Internet]. Vol. 23, Brazilian Dental Science. 2020. Available from: http://dx.doi.org/10.14295/bds.2020.v23i1.1805

20. Siqueira JF Jr. Aetiology of root canal treatment failure: why well-treated teeth can fail. Int Endod J. 2001 Jan;34(1):1–10.

21. Ramamoorthi S, Nivedhitha MS, Divyanand MJ. Comparative evaluation of postoperative pain after using endodontic needle and EndoActivator during root canal irrigation: A randomised controlled trial. Aust Endod J. 2015 Aug;41(2):78–87.

22. Teja KV, Ramesh S. Shape optimal and clean more. Saudi Endodontic Journal [Internet]. 2019;Availablefrom:http://www.saudiendodj.com/article.asp?issn=1658-5984;year=2019;volume=9;issue=3;spage=235;epage=236;aulast=Teja

23. Endo MS, Ferraz CCR, Zaia AA, Almeida JFA, Brenda P F. Quantitative and qualitative analysis of microorganisms in root-filled teeth with persistent infection: Monitoring of the endodontic retreatment [Internet]. Vol. 07, European Journal of Dentistry. 2013. p. 302–9. Available from: http://dx.doi.org/10.4103/1305-7456.115414

24. Sjögren U, Figdor D, Persson S, Sundqvist G. Influence of infection at the time of root filling on the outcome of endodontic treatment of teeth with apical periodontitis. Int Endod J. 1997 Sep;30(5):297–306.

25. Noor SSSE, S Syed Shihaab, Pradeep. Chlorhexidine: Its properties and effects [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1755. Available from: http://dx.doi.org/10.5958/0974-360x.2016.00353.x

26. Lin LM, Pascon EA, Skribner J, Gängler P, Langeland K. Clinical, radiographic, and histologic study of endodontic treatment failures. Oral Surg Oral Med Oral Pathol. 1991 May;71(5):603–11.

27. Lin LM, Skribner JE, Gaengler P. Factors associated with endodontic treatment failures. J Endod. 1992 Dec;18(12):625–7.

28. Manohar M, Sharma S. A survey of the knowledge, attitude, and awareness about the principal choice of intracanal medicaments among the general dental practitioners and nonendodontic specialists [Internet]. Vol. 29, Indian Journal of Dental Research. 2018. p. 716. Available from: http://dx.doi.org/10.4103/ijdr.ijdr_716_16

29. Nasim I, Nandakumar M. Comparative evaluation of grape seed and cranberry extracts in preventing enamel erosion: An optical emission spectrometric analysis [Internet]. Vol. 21, Journal of Conservative Dentistry. 2018. p. 516. Available from: http://dx.doi.org/10.4103/jcd.jcd_110_18

30. R R, Rajakeerthi R, Ms N. Natural Product as the Storage medium for an avulsed tooth – A Systematic Review [Internet]. Vol. 22, Cumhuriyet Dental Journal. 2019. p. 249–56. Available from: http://dx.doi.org/10.7126/cumudj.525182

31. Nasim I, Hussainy S, Thomas T, Ranjan M. Clinical performance of resin-modified glass ionomer cement, flowable composite, and polyacid-modified resin composite in noncarious cervical lesions: One-year follow-up [Internet]. Vol. 21, Journal of Conservative Dentistry. 2018. p. 510. Available from: http://dx.doi.org/10.4103/jcd.jcd_51_18

32. Bayram HM, Melike Bayram H, Çelikten B, Bayram E, Bozkurt A. Fluid flow evaluation of coronal microleakage intraorifice barrier materials in endodontically treated teeth [Internet]. Vol. 07, European Journal of Dentistry. 2013. p. 359–62. Available from: http://dx.doi.org/10.4103/1305-7456.115421

33. Swanson K, Madison S. An evaluation of coronal microleakage in endodontically treated teeth. Part I. Time periods. J Endod. 1987 Feb;13(2):56–9.

34. Ray HA, Trope M. Periapical status of endodontically treated teeth in relation to the technical quality of the root filling and the coronal restoration. Int Endod J. 1995 Jan;28(1):12–8.

35. Tronstad L, Asbjørnsen K, Døving L, Pedersen I, Eriksen HM. Influence of coronal restorations on the periapical health of endodontically treated teeth. Endod Dent Traumatol. 2000 Oct;16(5):218–21.

36. Jose J, P. A, Subbaiyan H. Different Treatment Modalities followed by Dental Practitioners for Ellis Class 2 Fracture – A Questionnaire-based Survey [Internet]. Vol. 14, The Open Dentistry Journal. 2020. p. 59–65. Available from: http://dx.doi.org/10.2174/1874210602014010059

37. Rajendran R, Kunjusankaran RN, Sandhya R, Anilkumar A, Santhosh R, Patil SR. Comparative Evaluation of Remineralizing Potential of a Paste Containing Bioactive Glass and a Topical Cream Containing Casein Phosphopeptide-Amorphous Calcium Phosphate: An in Vitro Study [Internet]. Vol. 19, Pesquisa Brasileira em Odontopediatria e Clínica Integrada. 2019. p. 1–10. Available from: http://dx.doi.org/10.4034/pboci.2019.191.61

38. Ng Y-L, Mann V, Rahbaran S, Lewsey J, Gulabivala K. Outcome of primary root canal treatment: systematic review of the literature -- Part 2. Influence of clinical factors. Int Endod J. 2008 Jan;41(1):6–31.

39. Ramanathan S, Solete P. Cone-beam Computed Tomography Evaluation of Root Canal Preparation using Various Rotary Instruments: An in vitro Study [Internet]. Vol. 16, The Journal of Contemporary Dental Practice. 2015. p. 869–72. Available from: http://dx.doi.org/10.5005/jp-journals-10024-1773

40. Siddique R, Sureshbabu NM, Somasundaram J, Jacob B, Selvam D. Qualitative and quantitative analysis of precipitate formation following interaction of chlorhexidine with sodium hypochlorite, neem, and tulsi. J Conserv Dent. 2019 Jan;22(1):40–7.

41. Kumar D, Delphine Priscilla Antony S. Calcified Canal and Negotiation-A Review [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 3727. Available from: http://dx.doi.org/10.5958/0974-360x.2018.00683.2

42. Wolcott J, Ishley D, Kennedy W, Johnson S, Minnich S, Meyers J. A 5 Yr Clinical Investigation of Second Mesiobuccal Canals in Endodontically Treated and Retreated Maxillary Molars [Internet]. Vol. 31, Journal of Endodontics. 2005. p. 262–4. Available from: http://dx.doi.org/10.1097/01.don.0000140581.38492.8b

43. Hoen MM, Pink FE. Contemporary endodontic retreatments: an analysis based on clinical treatment findings. J Endod. 2002 Dec;28(12):834–6.

44. Ramesh S, Teja K, Priya V. Regulation of matrix metalloproteinase-3 gene expression in inflammation: A molecular study [Internet]. Vol. 21, Journal of Conservative Dentistry. 2018. p. 592. Available from: http://dx.doi.org/10.4103/jcd.jcd_154_18

45. Ravinthar K, Jayalakshmi. Recent Advancements in Laminates and Veneers in Dentistry [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 785. Available from: http://dx.doi.org/10.5958/0974-360x.2018.00148.8

46. Al-Rawashdeh N, Damsees R, Al-Jeraisy M, Al Qasim E, Deeb AM. Knowledge of and attitudes toward clinical trials in Saudi Arabia: a cross-sectional study. BMJ Open. 2019 Oct 22;9(10):e031305.