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Role Of Lateral Incisors In Female - An Impact Towards Attractiveness Of Smile

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Abstract: Dental esthetics is a field of dentistry concerned especially with the appearance of dentition as achieved through its arrangement, form and color. The type of malocclusion, the degree of malocclusion, age, patients' esthetic desires, practitioners' style of treatment as well as gender predilection can influence the final esthetic treatment the patient will be subjected to. From functional demands, the patients of the current world, have shifted their demands to esthetics. Esthetics can be simply detected based on the position of lateral incisors. The aim of this study is to determine the prevalence of rotation, overlap and straightly positioned lateral incisors and its impact towards attractiveness of smile in female patients reporting to institutional setup in Chennai. A sample size of 500 patients' information from a database of an institutional setup in Chennai was taken after reviewing 86,000 patients and a retrospective study was performed followed by data analysis using SPSS version 20.0 software. It can be said that the attractiveness of a smile depends upon the relation of the lateral incisors. P value associated with lateral incisor position and age of the sample size was found to be 0.361.

Keywords: Esthetics ; Females ; Lateral Incisors ; Prevalence ; Retrospective Study

INTRODUCTION

Dental esthetics is a field of dentistry concerned especially with the appearance of dentition as achieved through its arrangement, form and color. This does not just cover the complete dentition and also aims at the beautification of the smile as a whole. The importance of dentofacial appeal in regard to the individual's psycho-social well-being is a proven fact. One of the most important factors that affect people's smiles is teeth. A dental restoration's positive impact on the patient's smile, appearance, self-confidence and overall mental health can not be underestimated. Dental aesthetic corrections can be categorized into facial esthetics, esthetic orthodontics and esthetic prosthodontics. The type of malocclusion, the degree of malocclusion, age, patients' esthetic desires, practitioners' style of treatment as well as gender predilection can influence the final esthetic treatment the patient will be subjected to.

Malocclusion can be defined as an abnormal alignment of upper and lower teeth. A malocclusion can be either minor or severe in nature. For such minor malocclusion, orthodontic treatment without surgery can be advised. In cases of severe malocclusions, surgical treatment might have to be performed. In certain cases, surgery along with orthodontics might still not be the solution with maximum esthetics ((Ganapathy, 2016; Ajay et al., 2017)). At one point of time, esthetic dentistry was a speciality for an orthodontist. But in current times, an oral maxillofacial surgeon and prosthodontist can be considered estheticians ((Turvey, 1988)) . A prosthodontist is responsible for the final outcome and hence uses a single system of implant components to maximize the outcome ((Ashok et al., 2014; Ganapathy, Kannan and Venugopalan, 2017; Duraisamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Sivaprakasam, 2019))

In the past world, functional demands were the main and sole focus of dental treatments. With time and technological advancements in dentistry, the main focus of demands had shifted to giving the patient the maximum esthetic values ((Samorodnitzky-Naveh, Geiger and Levin, 2007; Akarslan et al., 2009)). Dental aesthetics itself can be appreciated in cases of good oral hygiene ((Basha, Ganapathy and Venugopalan, 2018)), well designed prosthesis ((Venugopalan et al., 2014; Jain, Ranganathan and Ganapathy, 2017; Kannan and Venugopalan, 2018)) and even in treatment using ceramic restorations ((Ashok and Suvitha, 2016; Kannan and

Venugopalan, 2018)) . Acceptance of dental aesthetics varies from person to person based on the age of the patient ((Vallittu, Vallittu and Lassila, 1996)), gender of the patient, recognition of tooth color of the patient ((Brisman, 1980; Tjan, Miller and Josephine G. P. The, 1984; Beyer and Lindauer, 1998; Johnston, 1999; Jayalakshmi et al., 2013; Jain and Dhanraj, 2016; Khan and Kazmi, 2019)), retained primary teeth ((Bjerklin, 2000; Ith-Hansen, 2000; Robinson and W-Y. Chan, 2009)) as well as correlation of facial and dental midlines ((Brisman, 1980; Tjan, Miller and Josephine G. P. The, 1984; Beyer and Lindauer, 1998; Johnston, 1999; Jayalakshmi et al., 2013; Khan and Kazmi, 2019)) .

Certain studies show the attractiveness of a smile can be elevated by a simple correction of malalignment of the anterior teeth, such as overlapping, rotations of teeth ((Kokich, 1996)) as well as the anterior teeth selection ((Ariga et al., 2018)) . Many studies show that females are much more conscious of smile attractiveness in comparison to males ((Bass, 1991; Garber and Salama, 1996; Spear, Kokich and Mathews, 2006)).

In an institutional setup such as Saveetha Dental College, there are several types of studies conducted such as in vitro studies, reviews, case reports. ((Vijayalakshmi and Ganapathy, 2016; Jyothi et al., 2017),(Selvan and Ganapathy, 2016),(Subasree, Murthykumar and Dhanraj, 2016))

In the given study of lateral incisors' position, the sample size taken is completely of the female population with no missing teeth present. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J et al., 2018; Menon et al., 2018; Prabakar et al., 2018; Rajeshkumar et al., 2018, 2019; Vishnu Prasad et al., 2018; Wahab et al., 2018; Dua et al., 2019; Duraisamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Navarasampatti Sivaprakasam, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu et al., 2019; Mehta et al., 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran et al., 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma et al., 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi et al., 2020; Samuel, Acharya and Rao, 2020)

The aim of the study is to determine the prevalence of rotation, overlap and straightly positioned lateral incisors and its impact towards attractiveness of smile in female patients reporting to Saveetha Dental College, Chennai.

MATERIALS AND METHODOLOGY

A retrospective study was conducted in institutional setup in Chennai, using a database over the duration from June 2019 till March 2020 over the past 8 months with a sample size of 86,000 patients who reported to the institutional setup's OutPatient ward. The cases are narrowed down from the 86,000 patients to 500 cases. The data of the narrowed down sample size was collected from institutional setup's Database . The cases were selected on the basis of the age group 18-30 years and were ensured to be of female gender only. The patients were ensured to have no missing teeth. The cases of male gender, missing teeth or replaced teeth as well as age groups above 30 years or below 18 years are excluded from the study.

The study was conducted in a universal setting in a South Indian population. The positives of the study conducted was the similar ethnicity of the sample size of the study as well as the online availability of the database. This study was approved by the Ethical Board of the University. The Ethical number provided for this study was SDC/SIHEC/2020/DIASDATA/0619-0320 . There are 2 reviewers involved in the data collection process.

The case sheets of the given sample size of the study are reviewed by the usage of intraoral photos of the patients. Cross verification of the patient's data is performed to prevent errors. The measure to prevent errors done is to review the observer which will minimize the sampling bias.

The internal validity of the study is applicable. The external validity of the study defines the eligible criteria of the sample size population. The data was tabulated using the Microsoft Excel Spreadsheet and analysis of the data was performed using IBM SPSS version 20.0 software where chi square analytical tests were done.

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In a sample size of 500 patients, all the patients were ensured to be of ages 18 years till 30 years, all are of female population and have no missing teeth. Of that, 45.4% of the cases have rotated lateral incisors, 30.6% have overlapping lateral incisors and 24% have straughtly positioned lateral incisors. Using external reviewers, an attractive smile score if given to every patient's smile where 0 is allocated to a bad smile, 1 to an average smile and 2 is assigned to a good smile.

In a sample size of 500 patients, there are quite a few variables to be related. The following study's data was collected from intraoral photos of patient details uploaded onto institutional setup's Database. Using 2 external reviewers, the frontal intraoral photo was designated a score based on the perception of esthetics of the external reviewer. A bad smile was scored 0, average smile was scored 1 and a good aesthetic smile was awarded 2 points. Furthermore, the photos were studied to check if the lateral incisors' position was symmetric or

asymmetric in nature. Using IBM SPSS version 20.0 software, the data collected was subjected to chi square tests to understand the correlation between all the variables in the study conducted.

RESULTS & DISCUSSION

Dental aesthetics, in short, can be said to be the level of attractiveness of a smile. Every smile involved the anterior teeth, predominantly consisting of the teeth from either cornerstone of the mouth, which included central incisors as well as canines [(Kokich, 1993)].

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Using external reviewers, an attractive smile score if given to every patient's smile where 0 is allocated to a bad smile, 1 to an average smile and 2 is assigned to a good smile.

The sum total of the attractiveness smiles score distribution can be as follows-

Rotated lateral incisors - 165, Overlapped lateral incisors - 125, Straight lateral incisors - 235

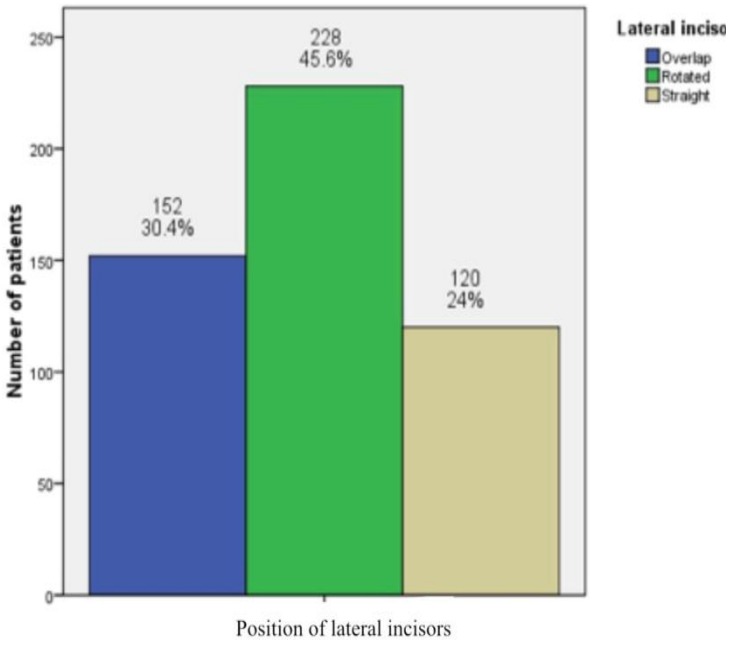

Fig.1:The above graph represents distribution of Lateral Incisor Position. X axis denotes the position of lateral incisors and Y axis denotes the number of patients with overlapped, rotated or straight lateral incisors. There is a higher percentage of rotated lateral incisors (45.6%) followed by overlapped lateral incisors (30.4%) and the least percentage is seen in straightly aligned lateral incisors (24%).

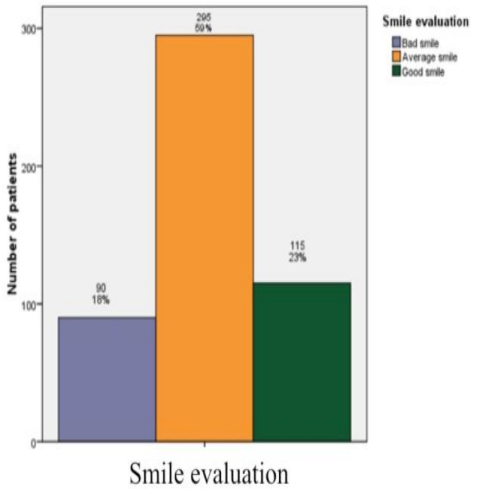

Fig.2:The above graph represents frequency of smile evaluation based on lateral incisor positioning. X axis denotes the smile evaluation(bad,average,good) and Y axis denotes the number of patients. There was a higher average attractive smile (59%), followed by an attractive good smile (23%) and a less attractive bad smile (18%).

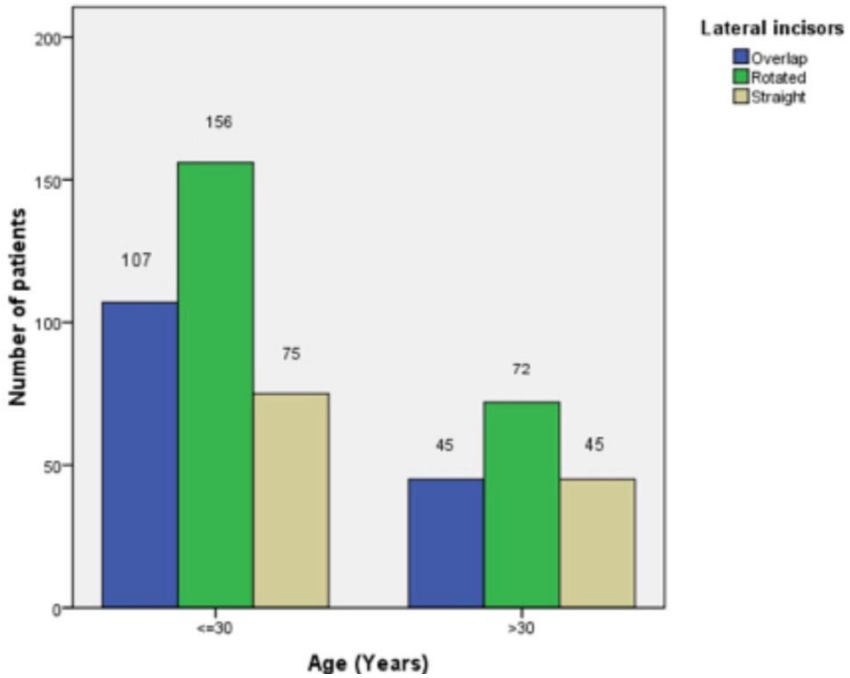

Fig.3 - The above graph represents the relation between Lateral Incisor's Position and age group of patients . X axis denotes the age of patients and Y axis denotes the number of patients. Less than 30 years of age rotated lateral incisors were noticed more. Pearsons' chi square value = 2.037; P value = 0.361 (p>0.05). Thus there is no significant association between Lateral Incisor's Position and age of patients.

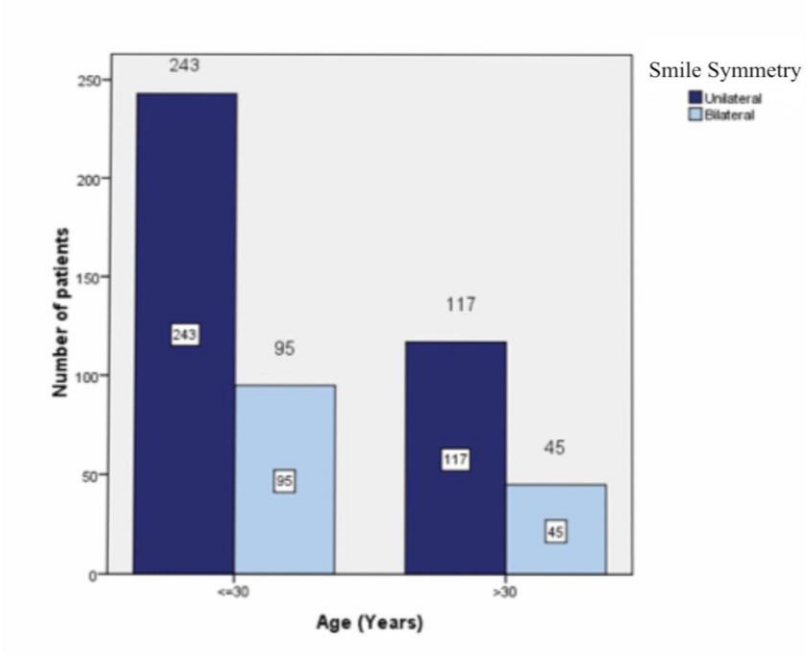

Fig.4:The above graph represents the association between Symmetry in Lateral Incisors' Position and age group. X axis denotes the age group and Y axis denotes the number of patients.Both the age group showed the maximum unilateral symmetry of lateral incisors. Pearsons' chi square value = 0.006 ; P value = 0.939 (p>0.05).Thus there was no significant association between Symmetry of Lateral Incisors' Position and age of patients.

Table 1

	SMILE	SYMMETRY	
	UNILATERAL	BILATERAL	
LESS ATTRACTIVE (Bad)	4.4%	95.6%	PEARSON'S CHI SQUARE = 338.96
AVERAGE ATTRACTIVE (Average)	100%	0%	P VALUE = 0.001
VERY ATTRACTIVE (Good)	53%	47%	Phi = 0.82

Table 1 shows the association between Smile Evaluation and Symmetry in Lateral Incisor' Position**.**There is a strong positive correlation(phi =0.8) and significant association between Symmetry in the Lateral Incisor's Position and quality of smile. Pearsons' chi square value = 338.96; P value = 0.001 ($p<0.05$). Unilateral symmetrical smile is more effective towards an average to good attractive smile.

Table 2

	LATERAL	**INCISOR**	**POSITION**	
	OVERLAP	**ROTATED**	**STRAIGHT**	
LESS ATTRACTIVE (Bad)	30%	70%	0%	PEARSON CHI SQUARE= 479.49

AVERAGE ATTRACTIVE (Average)	42.3%	55.9%	1.6%	P = 0.001
VERY ATTRACTIVE (Good)	0%	0%	100%	Phi = 0.9

Table 2 shows the association between Smile Evaluation and Lateral Incisor' Position .There is strong positive correlation (phi=0.9) and significant association between Smile Evaluation & Lateral Incisors' Position. Pearsons' chi square value = 479.492 ; P value = 0.001 ($p<0.05$). Rotated incisors are more prevalent towards an average attractive smile and overlap types are more prevalent for bad smiles whereas a good attractive smile consists of straightly positioned lateral incisors .

Asymmetry of lateral incisor showed average to good attractive smile while bilateral symmetric lateral incisor showed smile with less attractiveness as shown in Table 1.

In [(Ali and Hossain, 2013)] study, individuals with Angle's class I and class III show significantly greater prevalence of tooth size discrepancies than individuals with class II. Another study given by [(Muhamad, Nezar and Azzaldeen, 2016)] showed that very short and very long maxillary lateral incisors were consistently perceived as " least attractive " smiles. In [(Shaw, 1981)] study, it shows that normal dental appearance would be judged to be better looking, more desirable as friends, more intelligent, and less likely to behave aggressively.

Every study has its own limitations to overcome. One such limitation is the usage of photos of the patient and this can be overcome by reviewing the details of the patients intraorally. This study was conducted with the intent of enabling practitioners to early detection of the midline diastema causative agent and hence allows minimal invasive treatment using advanced techniques to provide treatment. Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh et al., 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadharsini, 2019; Mathew et al., 2020)

CONCLUSION

Within the limits of the study, it can be said that the attractiveness of a smile depends upon the position of the lateral incisors in a smile. Asymmetrical positioning straight and rotated lateral incisors has a higher impact on attractive smiles than symmetrical smiles.

AUTHOR CONTRIBUTIONS

First author, Dr Nadhirah Faiz, performed the analysis, and interception and wrote the manuscript. Second author, Dr.Subhabrata Maiti, contributed to conception , data design, analysis interpretation and critically revised manuscript. The third author, Dr Iffat Nasim , Participated in the study and revised the manuscript . The fourth author, Dr. Jessy, revised the manuscript as per guideline, alignments and formatting . All the authors have discussed the results and contributed to the final manuscript .

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REFERENCES

1. Ajay, R. et al. (2017) 'Effect of surface modifications on the retention of cement-retained implant crowns under fatigue loads: An In vitro study', Journal of Pharmacy And Bioallied Sciences, p. 154. doi: 10.4103/jpbs.jpbs_146_17.
2. Akarslan, Z. et al. (2009) 'Dental esthetic satisfaction, received and desired dental treatments for improvement of esthetics', Indian Journal of Dental Research, p. 195. doi: 10.4103/0970-9290.52902.
3. Ali, A. W. and Hossain, M. Z. (2013) 'A Study on Bolton Anterior Tooth Size Discrepancies among Different Malocclusion Groups', Bangladesh Journal of Orthodontics and Dentofacial Orthopedics, pp. 1–4. doi: 10.3329/bjodfo.v1i2.15982.
4. Ariga, P. et al. (2018) 'Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A Systematic Review', World Journal of Dentistry, pp. 68–75. doi: 10.5005/jp-journals-10015-1509.
5. Ashok, V. et al. (2014) 'Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report', The Journal of Indian Prosthodontic Society, pp. 279–282. doi: 10.1007/s13191-013-0339-6.
6. Ashok, V. and Suvitha, S. (2016) 'Awareness of all ceramic restoration in rural population', Research

Journal of Pharmacy and Technology, p. 1691. doi: 10.5958/0974-360x.2016.00340.1.
7. Basha, F. Y. S., Ganapathy, D. and Venugopalan, S. (2018) 'Oral Hygiene Status among Pregnant Women', Research Journal of Pharmacy and Technology, p. 3099. doi: 10.5958/0974-360x.2018.00569.3.
8. Bass, N. M. (1991) 'The aesthetic analysis of the face', The European Journal of Orthodontics, pp. 343–350. doi: 10.1093/ejo/13.5.343.
9. Beyer, J. W. and Lindauer, S. J. (1998) 'Evaluation of dental midline position', Seminars in Orthodontics, pp. 146–152. doi: 10.1016/s1073-8746(98)80016-9.
10. Bjerklin, K. (2000) 'The long-term survival of lower second primary molars in subjects with agenesis of the premolars', The European Journal of Orthodontics, pp. 245–255. doi: 10.1093/ejo/22.3.245.
11. Brisman, A. S. (1980) 'Esthetics: A Comparison of Dentists' and Patients' Concepts', The Journal of the American Dental Association, pp. 345–352. doi: 10.14219/jada.archive.1980.0093.
12. Deogade, S., Gupta, P. and Ariga, P. (2018) 'Effect of monopoly-coating agent on the surface roughness of a tissue conditioner subjected to cleansing and disinfection: A Contact Profilometric In vitro study', Contemporary Clinical Dentistry, p. 122. doi: 10.4103/ccd.ccd_112_18.
13. Dua, K. et al. (2019) 'The potential of siRNA based drug delivery in respiratory disorders: Recent advances and progress', Drug development research, 80(6), pp. 714–730.
14. Duraisamy, R., Krishnan, C. S., Ramasubramanian, H., Sampathkumar, J., Mariappan, S. and Sivaprakasam, A. N. (2019) 'Compatibility of Nonoriginal Abutments With Implants', Implant Dentistry, pp. 289–295. doi: 10.1097/id.0000000000000885.
15. Duraisamy, R., Krishnan, C. S., Ramasubramanian, H., Sampathkumar, J., Mariappan, S. and Navarasampatti Sivaprakasam, A. (2019) 'Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments', Implant dentistry, 28(3), pp. 289–295.
16. Ezhilarasan, D. (2018) 'Oxidative stress is bane in chronic liver diseases: Clinical and experimental perspective', Arab journal of gastroenterology: the official publication of the Pan-Arab Association of Gastroenterology, 19(2), pp. 56–64.
17. Ezhilarasan, D., Apoorva, V. S. and Ashok Vardhan, N. (2019) 'Syzygium cumini extract induced reactive oxygen species-mediated apoptosis in human oral squamous carcinoma cells', Journal of oral pathology & medicine: official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology, 48(2), pp. 115–121.
18. Ezhilarasan, D., Sokal, E. and Najimi, M. (2018) 'Hepatic fibrosis: It is time to go with hepatic stellate cell-specific therapeutic targets', Hepatobiliary & pancreatic diseases international: HBPD INT, 17(3), pp. 192–197.
19. Ganapathy, D. (2016) 'Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns', JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. doi: 10.7860/jcdr/2016/21447.9028.
20. Ganapathy, D. M., Kannan, A. and Venugopalan, S. (2017) 'Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis', World Journal of Dentistry, pp. 496–502. doi: 10.5005/jp-journals-10015-1493.
21. Garber, D. A. and Salama, M. A. (1996) 'The aesthetic smile: diagnosis and treatment', Periodontology 2000, pp. 18–28. doi: 10.1111/j.1600-0757.1996.tb00179.x.
22. Gheena, S. and Ezhilarasan, D. (2019) 'Syringic acid triggers reactive oxygen species-mediated cytotoxicity in HepG2 cells', Human & experimental toxicology, 38(6), pp. 694–702.
23. Gomathi, A. C. et al. (2020) 'Anticancer activity of silver nanoparticles synthesized using aqueous fruit shell extract of Tamarindus indica on MCF-7 human breast cancer cell line', Journal of Drug Delivery Science and Technology, p. 101376. doi: 10.1016/j.jddst.2019.101376.
24. Ith-Hansen, K. (2000) 'Persistence of deciduous molars in subjects with agenesis of the second premolars', The European Journal of Orthodontics, pp. 239–243. doi: 10.1093/ejo/22.3.239.
25. Jain, A., Ranganathan, H. and Ganapathy, D. (2017) 'Cervical and incisal marginal discrepancy in ceramic laminate veneering materials: A SEM analysis', Contemporary Clinical Dentistry, p. 272. doi: 10.4103/ccd.ccd_156_17.
26. Jain, A. R. and Dhanraj, M. (2016) 'A Clinical Review of Spacer Design for Conventional Complete Denture', Biology and Medicine. doi: 10.4172/0974-8369.1000307.
27. Jayalakshmi, N. S. et al. (2013) 'Acceptable Deviation between Facial and Dental Midlines in Dentate Population', The Journal of Indian Prosthodontic Society, pp. 473–477. doi: 10.1007/s13191-012-0234-6.
28. Jeevanandan, G. and Govindaraju, L. (2018) 'Clinical comparison of Kedo-S paediatric rotary files vs manual instrumentation for root canal preparation in primary molars: a double blinded randomised clinical trial', European Archives of Paediatric Dentistry, pp. 273–278. doi: 10.1007/s40368-018-0356-6.
29. Johnston, C. (1999) 'The influence of dental to facial midline discrepancies on dental attractiveness ratings', The European Journal of Orthodontics, pp. 517–522. doi: 10.1093/ejo/21.5.517.

30. J, P. C. et al. (2018) 'Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study', Clinical implant dentistry and related research, 20(4), pp. 531–534.
31. Jyothi, S. et al. (2017) 'Periodontal Health Status of Three Different Groups Wearing Temporary Partial Denture', Research Journal of Pharmacy and Technology, p. 4339. doi: 10.5958/0974-360x.2017.00795.8.
32. Kannan, A. and Venugopalan, S. (2018) 'A systematic review on the effect of use of impregnated retraction cords on gingiva', Research Journal of Pharmacy and Technology, p. 2121. doi: 10.5958/0974-360x.2018.00393.1.
33. Khan, M. and Kazmi, S. (2019) 'Coincidence of Dental Midline with Facial Midline in a Sample of Pakistani Population', Journal of the College of Physicians and Surgeons Pakistan, pp. 210–213. doi: 10.29271/jcpsp.2019.03.210.
34. Kokich, V. (1993) 'Esthetics and Anterior Tooth Position: An Orthodontic Perspective Part III: Mediolateral Relationships', Journal of Esthetic and Restorative Dentistry, pp. 200–207. doi: 10.1111/j.1708-8240.1993.tb00781.x.
35. Kokich, V. G. (1996) 'Esthetics: the orthodontic-periodontic restorative connection', Seminars in Orthodontics, pp. 21–30. doi: 10.1016/s1073-8746(96)80036-3.
36. Malli Sureshbabu, N. et al. (2019) 'Concentrated Growth Factors as an Ingenious Biomaterial in Regeneration of Bony Defects after Periapical Surgery: A Report of Two Cases', Case reports in dentistry, 2019, p. 7046203.
37. Mathew, M. G. et al. (2020) 'Evaluation of adhesion of Streptococcus mutans, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary …', Clinical oral investigations. Available at: https://link.springer.com/article/10.1007/s00784-020-03204-9.
38. Mehta, M. et al. (2019) 'Oligonucleotide therapy: An emerging focus area for drug delivery in chronic inflammatory respiratory diseases', Chemico-biological interactions, 308, pp. 206–215.
39. Menon, S. et al. (2018) 'Selenium nanoparticles: A potent chemotherapeutic agent and an elucidation of its mechanism', Colloids and Surfaces B: Biointerfaces, pp. 280–292. doi: 10.1016/j.colsurfb.2018.06.006.
40. Muhamad, A.-H., Nezar, W. and Azzaldeen, A. (2016) 'Esthetic Management of Congenitally Missing Lateral Incisors With Single Tooth Implants: A Case Report', IOSR Journal of Dental and Medical Sciences, pp. 69–75. doi: 10.9790/0853-1508096975.
41. Panchal, V., Jeevanandan, G. and Subramanian, E. M. G. (2019) 'Comparison of post-operative pain after root canal instrumentation with hand K-files, H-files and rotary Kedo-S files in primary teeth: a randomised clinical trial', European archives of paediatric dentistry: official journal of the European Academy of Paediatric Dentistry, 20(5), pp. 467–472.
42. Pc, J., Marimuthu, T. and Devadoss, P. (2018) 'Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study', Clinical implant dentistry and related research. Available at: https://europepmc.org/article/med/29624863.
43. Prabakar, J. et al. (2018) 'Comparative Evaluation of Retention, Cariostatic Effect and Discoloration of Conventional and Hydrophilic Sealants - A Single Blinded Randomized Split Mouth Clinical Trial', Contemporary clinical dentistry, 9(Suppl 2), pp. S233–S239.
44. Rajendran, R. et al. (2019) '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', Pesquisa Brasileira em Odontopediatria e Clínica Integrada, pp. 1–10. doi: 10.4034/pboci.2019.191.61.
45. Rajeshkumar, S. et al. (2018) 'Biosynthesis of zinc oxide nanoparticles usingMangifera indica leaves and evaluation of their antioxidant and cytotoxic properties in lung cancer (A549) cells', Enzyme and microbial technology, 117, pp. 91–95.
46. Rajeshkumar, S. et al. (2019) 'Antibacterial and antioxidant potential of biosynthesized copper nanoparticles mediated through Cissus arnotiana plant extract', Journal of photochemistry and photobiology. B, Biology, 197, p. 111531.
47. Ramadurai, N. et al. (2019) 'Effectiveness of 2% Articaine as an anesthetic agent in children: randomized controlled trial', Clinical oral investigations, 23(9), pp. 3543–3550.
48. Ramakrishnan, M., Dhanalakshmi, R. and Subramanian, E. M. G. (2019) 'Survival rate of different fixed posterior space maintainers used in Paediatric Dentistry - A systematic review', The Saudi dental journal, 31(2), pp. 165–172.
49. Ramesh, A. et al. (2018) 'Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study', Journal of periodontology, 89(10), pp. 1241–1248.
50. Robinson, S. and W-Y. Chan, M. F. (2009) 'New teeth from old: treatment options for retained primary teeth', British Dental Journal, pp. 315–320. doi: 10.1038/sj.bdj.2009.855.
51. Samorodnitzky-Naveh, G. R., Geiger, S. B. and Levin, L. (2007) 'Patients' satisfaction with dental esthetics', The Journal of the American Dental Association, pp. 805–808. doi: 10.14219/jada.archive.2007.0269.

52. Samuel, S. R., Acharya, S. and Rao, J. C. (2020) 'School Interventions-based Prevention of Early-Childhood Caries among 3-5-year-old children from very low socioeconomic status: Two-year randomized trial', Journal of public health dentistry, 80(1), pp. 51–60.
53. Selvan, S. R. and Ganapathy, D. (2016) 'Efficacy of fifth generation cephalosporins against methicillin-resistant Staphylococcus aureus-A review', Research Journal of Pharmacy and Technology, p. 1815. doi: 10.5958/0974-360x.2016.00369.3.
54. Sharma, P. et al. (2019) 'Emerging trends in the novel drug delivery approaches for the treatment of lung cancer', Chemico-biological interactions, 309, p. 108720.
55. Shaw, W. C. (1981) 'The influence of children's dentofacial appearance on their social attractiveness as judged by peers and lay adults', American Journal of Orthodontics, pp. 399–415. doi: 10.1016/0002-9416(81)90382-1.
56. Spear, F. M., Kokich, V. G. and Mathews, D. P. (2006) 'Interdisciplinary management of anterior dental esthetics', The Journal of the American Dental Association, pp. 160–169. doi: 10.14219/jada.archive.2006.0140.
57. Sridharan, G. et al. (2019) 'Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma', Journal of oral pathology & medicine: official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology, 48(4), pp. 299–306.
58. Subasree, S., Murthykumar, K. and Dhanraj (2016) 'Effect of Aloe Vera in Oral Health-A Review', Research Journal of Pharmacy and Technology, p. 609. doi: 10.5958/0974-360x.2016.00116.5.
59. Tjan, A. H. L., Miller, G. D. and Josephine G. P. The (1984) 'Some esthetic factors in a smile', The Journal of Prosthetic Dentistry, pp. 24–28. doi: 10.1016/s0022-3913(84)80097-9.
60. Turvey, T. A. (1988) 'Orthognathic surgery: a significant contribution to facial and dental esthetics', The Journal of the American Dental Association, p. 49E–55E. doi: 10.14219/jada.archive.1988.0041.
61. Vallittu, P. K., Vallittu, A. S. J. and Lassila, V. P. (1996) 'Dental aesthetics — a survey of attitudes in different groups of patients', Journal of Dentistry, pp. 335–338. doi: 10.1016/0300-5712(95)00079-8.
62. Varghese, S. S., Ramesh, A. and Veeraiyan, D. N. (2019) 'Blended Module-Based Teaching in Biostatistics and Research Methodology: A Retrospective Study with Postgraduate Dental Students', Journal of dental education, 83(4), pp. 445–450.
63. Venugopalan, S. et al. (2014) 'Magnetically retained silicone facial prosthesis', Nigerian Journal of Clinical Practice, p. 260. doi: 10.4103/1119-3077.127575.
64. Vijayalakshmi, B. and Ganapathy, D. (2016) 'Medical management of cellulitis', Research Journal of Pharmacy and Technology, p. 2067. doi: 10.5958/0974-360x.2016.00422.4.
65. Vijayashree Priyadharsini, J. (2019) 'In silico validation of the non-antibiotic drugs acetaminophen and ibuprofen as antibacterial agents against red complex pathogens', Journal of periodontology, 90(12), pp. 1441–1448.
66. Vishnu Prasad, S. et al. (2018) 'Report on oral health status and treatment needs of 5-15 years old children with sensory deficits in Chennai, India', Special care in dentistry: official publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry, 38(1), pp. 58–59.
67. Wahab, P. U. A. et al. (2018) 'Scalpel Versus Diathermy in Wound Healing After Mucosal Incisions: A Split-Mouth Study', Journal of oral and maxillofacial surgery: official journal of the American Association of Oral and Maxillofacial Surgeons, 76(6), pp. 1160–1164.