

## **Prevalence Of Different Occlusal Schemes For Pre And Post Treatment In Tooth Supported Full Mouth Rehabilitation: A Retrospective Study**

**Aman Merchant**

Saveetha Dental College And Hospital  
Saveetha Institute Of Medical And Technical Science,  
Saveetha University  
Chennai, India  
Email -:151809002@Sdc.Com

**Subhashree R**

Department Of Prosthodontics  
Saveetha Dental College And Hospital  
Saveetha Institute Of Medical And Technical Science,  
Saveetha University  
Chennai.  
Email - Subhashreer.Sdc@Saveetha.Com

**Visalakshi Ramanathan**

Department Of Prosthodontics  
Saveetha Dental College And Hospital  
Saveetha Institute Of Medical And Technical Science,  
Saveetha University  
Chennai.  
Email -: Visalakshirm.Sdc@Gmail.Com

### **Abstract:**

Full Mouth Rehabilitation Cases Are One Of The Most Challenging Cases Faced By Any Clinician. It Needs Efficient Diagnosis And Elaborate Treatment Planning To Establish Harmonious Occlusal Contacts To Establish Optimum Stomatognathic Function. Hence, The Clinician Should Possess Detailed And Thorough Clinical Knowledge Regarding Various Occlusal Schemes. The Objective Of This Study Is To Evaluate The Prevalence Of Different Occlusal Schemes In Patients Undergoing Tooth Supported Full Mouth Rehabilitation Before And After The Treatment. This Retrospective Study Was Carried Out From The Data Obtained From The Patients' Case Sheet. A Total Of 51 Subjects Were Selected, Requiring Full Mouth Rehabilitation For The Dentition. The Prevalence Of Two Different Occlusal Schemes Were Evaluated. Group 1: Canine Guided Occlusion Group 2: Group Function Occlusion. Correlation Was Checked With Phi Correlation. It Was Observed That The Majority Of The Patients Had Group Function Occlusion Prior To The Treatment And After The Completion Of The Treatment, The Number Of Patients Having Canine Guided Occlusion Increased. There Was A Positive Correlation Between The Preoperative And Postoperative Treatment Occlusions. It Was Also Observed That Maximum Patients Were Seen In The Middle Age Group And Were Male Patients. In This Study, It Can Be Concluded That Although The Majority Of Patients Had Group Function Occlusion Prior To The Treatment, The Majority Of Operators Chose To Give Canine Guided Occlusion.

**Keywords:** Canine Guided Occlusion, Full Mouth Rehabilitation, Group Function Occlusion

### **1. Introduction**

The Gradual Wear Of Tooth Surfaces Is A Common Clinical Problem Seen In The Population<sup>1-3</sup>. However, Excessive Occlusal Wear Can Result In Pulpal Pathology, Occlusal Disharmony, Impaired Function, And Esthetic Disfigurement<sup>4,5</sup>. In Such Cases, Restoration Needs To Be Done To Prevent Further Escalation Of The Tooth Wear<sup>6,7</sup>. Of All The Clinical Procedures, Full Mouth Rehabilitation Treatment Is One Of The Most Demanding Treatments As It Cumulates Multiple Treatments With A Multidisciplinary Approach<sup>8,9</sup>. Full Mouth

Rehabilitation Treatments Can Range From Mild Composite Build Ups To Giving Full Veneer Crowns<sup>10,11</sup>. The Key To A Successful Full Mouth Rehabilitation Treatment Is Optimum Occlusal Contacts, In Both Centric And Eccentric Positions<sup>10,12</sup>.

The Reason For Doing Lateral Excursive Movements Is To Distribute The Force Over Several Teeth<sup>13</sup>. The Lateral Excursive Movements Have Been Divided Into Two Occlusal Schemes, Canine Guided Occlusion And Group Function Occlusion. Canine Guided Occlusion As Described By D'amico<sup>14</sup> Is Said To Favor The Vertical Chewing Pattern, By Guiding The Mandible Through The Periodontal Receptors With The Help Of Canines And Preventing Wear Of The Tooth. On The Other Hand, Group Function Occlusion As Described By Beyron<sup>15</sup> Is Said To Evenly Contact And Distribute The Load Among Several Teeth. There Are Various Many Similarities And Differences Between The Canine Guided And Group Function Occlusal Schemes<sup>16</sup>. Both The Occlusal Schemes Must Have Multiple Posterior Contacts During Centric Relation Or In Imm Protrusion<sup>17</sup>. There Must Be An Absence Of Occlusal Contact On The Nonworking Side During Lateral Excursive Movements<sup>15</sup>. There Should Be A Group Functional Occlusion In The Anterior Teeth And No Contact In The Posterior Teeth During A Protrusive Movement<sup>18</sup>. The Major Difference Between Both The Occlusal Schemes Is The Manner In Which The Teeth Contact. In Canine Guided Occlusion, Only The Canines Will Contact In Lateral Excursion, Whereas, In Group Function, Most Of The Posterior Teeth Will Contact. The Theory Behind Canine Guided Occlusion Is 1) Canines Have The Longest Roots; Hence Can Take More Force, 2) Strategic Position Of Canines At The Corner Of The Mouth Makes It A Link Between The Anterior And Posterior Teeth, 3) Provide High Proprioception, 4) Shape Of Palatal Surface Of Canine Is Concave; Hence Guides Lateral Movements, 5) Posterior Teeth Can Take Vertical Force More Than The Lateral Force And 6) Canine Guided Occlusion Reduces The Chance Of Temporomandibular Dysfunction As It Shifts The Fulcrum Line Away From The Joint And Reduces The Chances Of Muscular Dysfunction<sup>19</sup>. The Theory Behind Giving Group Function Occlusion Is Distribution Of The Force Among Several Teeth To Decrease The Chances Of Tooth Wear<sup>20</sup>. The Clinician Should Understand The Concept Behind Both The Occlusal Schemes And Assess Its Advantages, Disadvantages, Indications And Contraindications<sup>21,22</sup>. Previously Our Team Has A Rich Experience In Working On Various Research Projects Across Multiple Disciplines The<sup>23-2526-37</sup>.

Hence, This Study Is Done To Evaluate The Prevalence Of Occlusal Schemes Before And After Full Mouth Rehabilitation Treatment And Evaluate Its Correlation With Age And Gender Of The Patients.

## **2.Materials And Methods**

### **Study Design**

This Retrospective Cross Sectional Study Was Carried Out In The Department Of Prosthodontics, Saveetha Dental College, Chennai, India. The Present Study Was Approved By The Ethics Committee Of Saveetha Dental College, Chennai, India. The Data Was Obtained From The Case Records Of The Patients Coming To The Outpatient Department Of The College.

### **Sample Selection**

From June 2019 To May 2020, The Subject Selection Of This Study Was Done In Saveetha Dental College, Chennai, India Based On The Inclusion And Exclusion Criteria.

#### **Inclusion Criteria**

- 1) At Least 18 Years Old.
- 2) Healthy Subjects With No History Of Systemic Diseases.
- 3) Both Genders.
- 4) Patients Requiring Tooth Supported Full Mouth Rehabilitation
- 5) Signed Informed Consent

#### **Exclusion Criteria**

- 1) Patients With Systemic Disease
- 2) Alcoholic Patients
- 3) Patients Having Multiple Missing Teeth
- 4) Patients Having Implants
- 5) Patients Having Removable Prosthesis
- 6) Patients Not Willing For The Treatment.

After The Inclusion And Exclusion Criteria, The Number Of Subjects Were Shortlisted From 86,000 To 51. Analysis Of The Occlusion Was Done With Photographic Assessment.

## Groups

Group 1: Canine Guided Occlusion

Group 2: Group Function Occlusion

## Statistical Analysis

All Analyses Were Conducted Using Spss 21 (Spss Inc., Chicago, Il). Descriptive Statistics Such As Frequency Was Carried Out For Each Model. A Phi Correlation Was Done To Determine The Association Between Pretreatment Occlusal Scheme And Post Treatment Occlusal Schemes. A Chi Square Test Was Done To Determine The Correlation Between The Different Occlusal Schemes With Age And Gender.

## Statistical Variables

The Independent Variables In This Study Are The Study Groups.

The Dependent Variables In This Study Are The Two Occlusal Schemes.

## 3. Results And Discussion:

In This Study, It Is Observed That Before The Treatment Started, Most Of The Patients Had A Group Function Occlusion (60.8%), Whereas Very Few Patients Had A Canine Guided Occlusion (39.2%). This Could Be Explained By The Fact That There Is A Possibility Of A Canine Guided Occlusal Scheme Shifting To A Group Function Occlusion Due To Missing, Trauma Or Wear Of The Canines. There Are Some Articles Supporting This Theory<sup>38</sup>. It Is Also Observed That After The Treatment Was Completed, The Number Of Patients Having Canine Guided Occlusion Increased (49.0%) And The Number Of Patients Having Group Function Occlusion Decreased (51.0%). The Reason Behind This May Be That The Clinicians Felt That The Canine Guided Occlusal Scheme Is Better Than Group Function Occlusal Scheme. The Correlation That Was Checked With Phi Correlation Showed That There Was A Strong Correlation Between The Preoperative And Postoperative Procedures.

In This Study, It Is Observed That Both, The Canine Guided Occlusion (33.3%) And Group Function Occlusion (41.2%) Were More Common In Middle Aged Groups Of Patients. In The Young Group Of People, The Number Of Patients Having Group Function Occlusion (7.8%) Were More Than Those Having Canine Guided Occlusion (3.9%), Although The Difference Was Not Much. There Was A Clinical Difference Seen, But It Was Not Statistically Significant. It Is In Contrast To Some Of The Studies, Which Have Reported That There Is More Prevalence Of Canine Guided Occlusion In The Young Population, Whereas, There Is More Prevalence Of Group Function Occlusion In Elderly Patients Due To Wear Of The Canines<sup>39</sup>.

It Was Also Observed That Both, The Canine Guided Occlusion (29.4%) And Group Function Occlusion (33.3%) Are More Common In Males As Compared To Females. It Is Believed That Females Have A Higher Prevalence Of Canine Guided Occlusion, Since Males Experience Wearing Of The Canine Due To Heavy Masticatory Forces. This Is Supported By Some Literature<sup>40</sup>.

There Are Many Authors Who Evaluated Canine Guided Occlusion And Group Function Occlusion. Schulyer<sup>41</sup> Reported That Group Function Occlusion Was A Compensatory Mechanism To Distribute Stress Evenly Among The Teeth. Scaife And Holt<sup>41,42</sup> Reported That The Proportion Of Wear Facets Increased With The Increase In Group Function Occlusion Due To Lateral Forces. Fereidoun Parnia And Elnaz Moslehi<sup>43</sup> Studied The Pattern Of Occlusal Contacts In Lateral Excursion And Found That 60% Of The Subjects Had Group Function Occlusion. Ingervell<sup>43,44</sup> Studied Occlusal Contacts In The Lateral Excursion, Protrusion And Retrusion And Found That Most Of The Subjects Had Group Function Occlusion On The Working Side. Rinchuse, Kandasamy And Sciote<sup>45</sup> Reported That Canine Guided Occlusion Was The Optimum Occlusion To Be Used. O' Leary, Shanley And Drake<sup>46</sup> Found That Teeth In Group Function Had Less Mobility As Compared To Teeth In Canine Guided Occlusion. Panek Et Al<sup>47</sup> Reported That According To His Findings, Bilateral Canine Guided Occlusion Was The Best For Young Patients And Group Function Occlusion For The Elderly Patients. Our Institution Is Passionate About High Quality Evidence Based Research And Has Excelled In Various Fields ( <sup>48-58</sup>.

Although This Study Showed That Group Function Occlusion Was More Prevalent In Tooth Supported Full Mouth Cases Before Commencement Of The Cases, There Are Limitations To The Study. Since The Study Is Based On Photographic Assessment, The Angle Of The Picture Or The Clarity Of The Picture Can Change The Operator's Perception, Which Can Lead To Bias.

Groups		Pre-Treatment	Post-Treatment	P Value	Phi Correlation
Canine Guided Occlusion	Count	20	25	0.016	0.337
	% Of Total	19.61%	24.51%		
Group Function Occlusion	Count	31	26		
	% Of Total	30.39%	25.49%		

Table 1: Depicting The Frequencies Of The Occlusal Schemes Before And After The Treatment.

Parameters			Canine Guided Occlusion	Group Function Occlusion	Chi Square Value	P-Value
Age	20-40 Years	Count	2	4	2.398	0.301
		% Of Total	(3.9%)	(7.8%)		
	41-60 Years	Count	17	21		
		% Of Total	(33.3%)	(41.2%)		
>60 Years	Count	1	6			
	% Of Total	(2.0%)	(11.8%)			
Gender	Male	Count	15	17	2.114	0.146
		% Of Total	(29.4%)	(33.3%)		
Female	Count	5	14			
	% Of Total	(9.8%)	(27.5%)			

Table 2: Depicting The Correlation Between Occlusal Schemes With Age And Gender

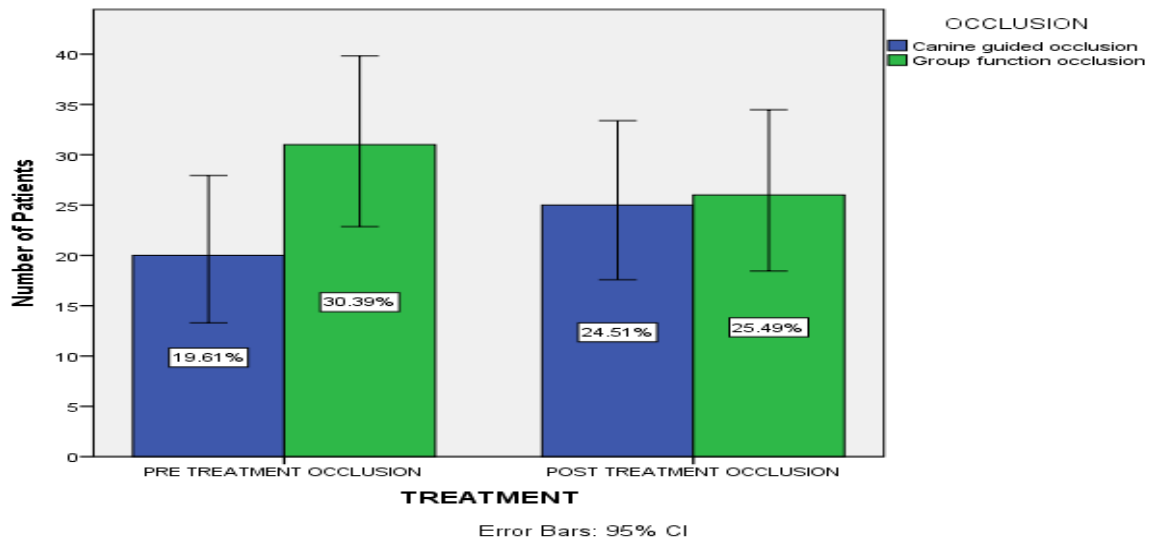


Figure 1: Bar Graph Representing The Association Between Preoperative Treatment And Postoperative Treatment Occlusions. The X- Axis Represents The Preoperative And Postoperative Occlusions And The Y- Axis Represents

Prevalence Of Different Occlusal Schemes For Pre And Post Treatment In Tooth Supported Full Mouth Rehabilitation: A Retrospective Study

The Number Of Patients Having Different Occlusal Schemes Like Canine Guided Occlusion (Blue) And Group Function Occlusion (Green). Phi And Cramer Correlation Was Done And Found To Be Significant. (Phi Correlation Value : 0.337; P Value: 0.016 (< 0.05), Proving There Is A Strong Association Between Pretreatment Occlusal Scheme And Post Treatment Occlusal Scheme.

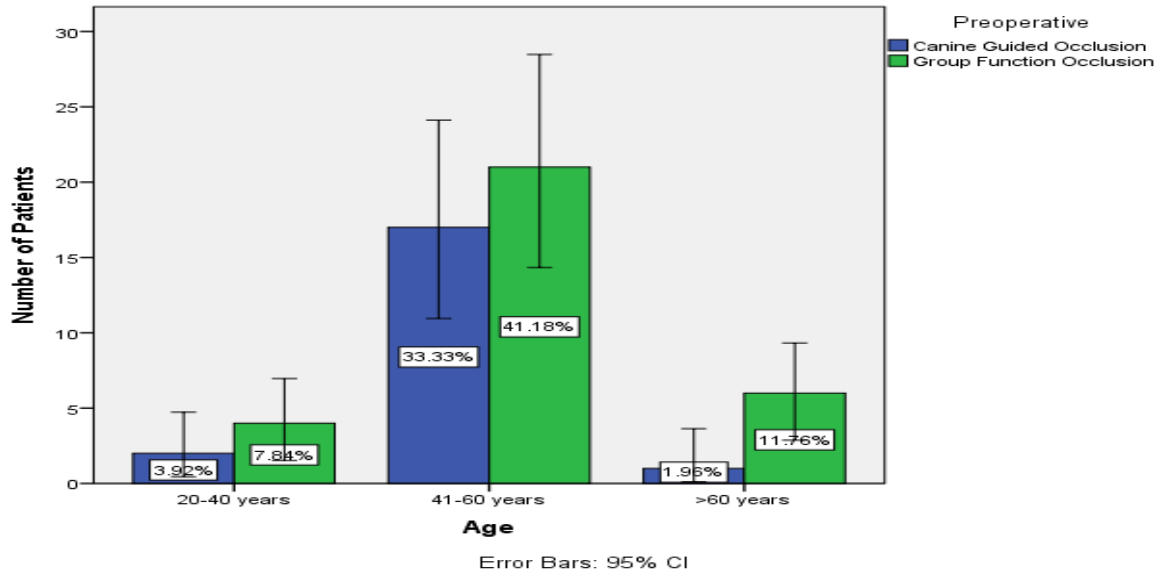


Figure 2: Bar Graph Representing The Association Between Different Occlusal Schemes And Age. X-Axis Represents The Age And Y-Axis Represents The Number Of Patients Having Different Occlusal Schemes Like Canine Guided Occlusion (Blue) And Group Function Occlusion (Green). Chi Square Association Was Done And Found To Be Statistically Not Significant. (Chi Square Value : 2.398, Df : 2 , P Value : 0.301 (P > 0.05)). However, Both The Occlusal Schemes Were Most Commonly Seen In Between The Age Groups Of 41-60 Years.

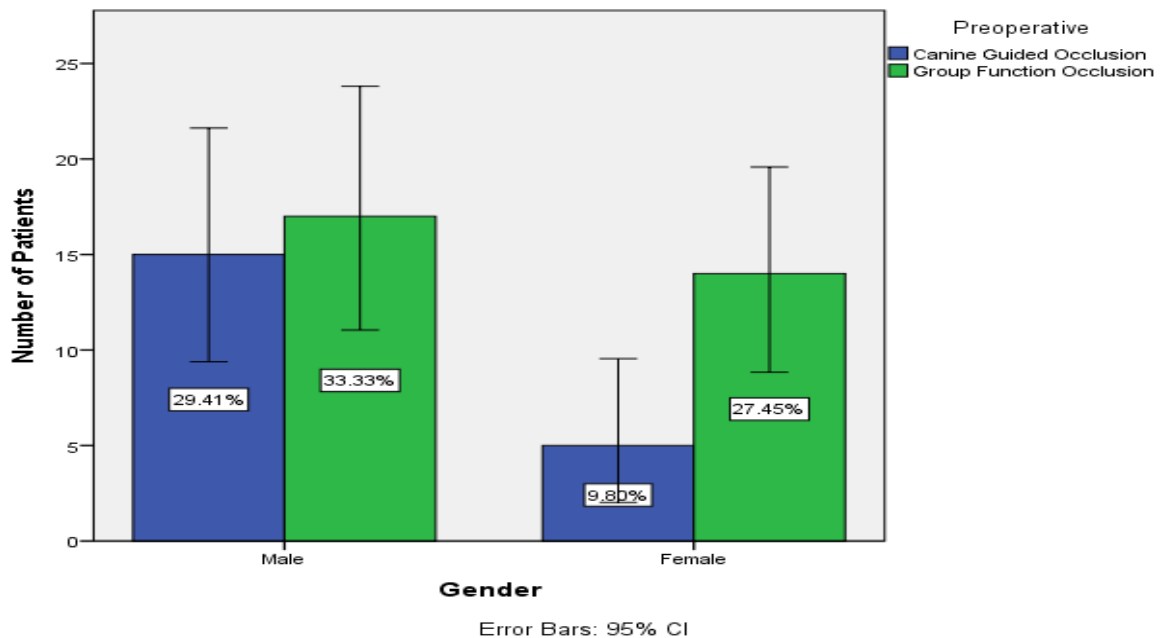


Figure 3: Bar Graph Representing The Association Between Different Occlusal Schemes And Gender. X-Axis Represents The Gender And Y-Axis Represents The Number Of Patients Having Different Occlusal Schemes Like Canine Guided Occlusion (Blue) And Group Function Occlusion (Green). Chi Square Association Was Done And Found To Be Statistically Not Significant. (Chi Square Value : 2.114, Df : 1, P Value : 0.146 (P > 0.05)), However, Both The Occlusal Schemes Were More Common In Males Than In Females.

4. Conclusion

In This Study, The Prevalence Of Canine Guided Occlusion And Group Function Occlusion Was Checked Before And After Full Mouth Rehabilitation Treatment. It Can Be Concluded That Although The Majority Of Patients Had Group Function Occlusion Prior To The Treatment, The Majority Of Operators Chose To Give Canine Guided Occlusion. More Number Of In Vivo Studies Need To Be Conducted Under One Operator And Parameters Such As Wear And Longevity Of The Prosthesis Should Be Checked. Dental Students Should Be Explained About The Pros And Cons Of Both The Occlusal Schemes In Order To Achieve An Optimum Occlusal Calibration Ensuring Long Term Satisfactory Results.

## 5. Acknowledgement

We Would Like To Acknowledge Saveetha Dental College And Hospital For Providing Complete Patient Details Required For The Study Purpose And Their Constant Help And Support For This Research.

## 6. Conflict Of Interest

The Authors Declare No Conflict Of Interest.

## 7. References

1. Bartlett D, Phillips K, Smith B. A Difference In Perspective--The North American And European Interpretations Of Tooth Wear. *Int J Prosthodont*. 1999 Sep;12(5):401–8.
2. Ashok V, Suvitha S. Awareness Of All Ceramic Restoration In Rural Population [Internet]. Vol. 9, *Research Journal Of Pharmacy And Technology*. 2016. P. 1691. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2016.00340.1](http://Dx.Doi.Org/10.5958/0974-360x.2016.00340.1)
3. Vijayalakshmi B, Ganapathy D. Medical Management Of Cellulitis [Internet]. Vol. 9, *Research Journal Of Pharmacy And Technology*. 2016. P. 2067. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2016.00422.4](http://Dx.Doi.Org/10.5958/0974-360x.2016.00422.4)
4. Smith Bg, Knight Jk. An Index For Measuring The Wear Of Teeth [Internet]. Vol. 156, *British Dental Journal*. 1984. P. 435–8. Available From: [Http://Dx.Doi.Org/10.1038/Sj.Bdj.4805394](http://Dx.Doi.Org/10.1038/Sj.Bdj.4805394)
5. Jyothi S, Robin Pk, Ganapathy D, Anandiselvaraj. Periodontal Health Status Of Three Different Groups Wearing Temporary Partial Denture [Internet]. Vol. 10, *Research Journal Of Pharmacy And Technology*. 2017. P. 4339. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2017.00795.8](http://Dx.Doi.Org/10.5958/0974-360x.2017.00795.8)
6. Ganapathy D, Sathyamoorthy A, Ranganathan H, Murthykumar K. Effect Of Resin Bonded Luting Agents Influencing Marginal Discrepancy In All Ceramic Complete Veneer Crowns. *J Clin Diagn Res*. 2016 Dec;10(12):Zc67–70.
7. Venugopalan S, Ariga P, Aggarwal P, Viswanath A. Magnetically Retained Silicone Facial Prosthesis. *Niger J Clin Pract*. 2014 Mar;17(2):260–4.
8. 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.
9. Jain A, Ranganathan H, Ganapathy D. Cervical And Incisal Marginal Discrepancy In Ceramic Laminate Veneering Materials: A Sem Analysis [Internet]. Vol. 8, *Contemporary Clinical Dentistry*. 2017. P. 272. Available From: [Http://Dx.Doi.Org/10.4103/Ccd.Ccd\\_156\\_17](http://Dx.Doi.Org/10.4103/Ccd.Ccd_156_17)
10. Kannan A, Venugopalan S. A Systematic Review On The Effect Of Use Of Impregnated Retraction Cords On Gingiva [Internet]. Vol. 11, *Research Journal Of Pharmacy And Technology*. 2018. P. 2121. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2018.00393.1](http://Dx.Doi.Org/10.5958/0974-360x.2018.00393.1)
11. Selvan Sr, Ganapathy D. Efficacy Of Fifth Generation Cephalosporins Against Methicillin-Resistant *Staphylococcus Aureus*-A Review [Internet]. Vol. 9, *Research Journal Of Pharmacy And Technology*. 2016. P. 1815. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2016.00369.3](http://Dx.Doi.Org/10.5958/0974-360x.2016.00369.3)
12. Ajay R, Suma K, Ali S, Sivakumar Jk, Rakshagan V, Devaki V, Et Al. Effect Of Surface Modifications On The Retention Of Cement-Retained Implant Crowns Under Fatigue Loads: An In Vitro Study [Internet]. Vol. 9, *Journal Of Pharmacy And Bioallied Sciences*. 2017. P. 154. Available From: [Http://Dx.Doi.Org/10.4103/Jpbs.Jpbs\\_146\\_17](http://Dx.Doi.Org/10.4103/Jpbs.Jpbs_146_17)
13. Ariga P, Nallaswamy D, Jain Ar, Ganapathy Dm. Determination Of Correlation Of Width Of Maxillary Anterior Teeth Using Extraoral And Intraoral Factors In Indian Population: A Systematic Review [Internet]. Vol. 9, *World Journal Of Dentistry*. 2018. P. 68–75. Available From: [Http://Dx.Doi.Org/10.5005/Jp-Journals-10015-1509](http://Dx.Doi.Org/10.5005/Jp-Journals-10015-1509)
14. D'amico A. The Canine Teeth: Normal Functional Relation Of The Natural Teeth Of Man. 1957. 74 P.
15. Beyron Hl. Characteristics Of Functionally Optimal Occlusion And Principles Of Occlusal Rehabilitation [Internet]. Vol. 48, *The Journal Of The American Dental Association*. 1954. P. 648–56. Available

Prevalence Of Different Occlusal Schemes For Pre And Post Treatment In Tooth Supported Full Mouth Rehabilitation: A Retrospective Study

From: [Http://Dx.Doi.Org/10.14219/Jada.Archive.1954.0111](http://dx.doi.org/10.14219/Jada.Archive.1954.0111)

16. Basha Fys, Ganapathy D, Venugopalan S. Oral Hygiene Status Among Pregnant Women [Internet]. Vol. 11, Research Journal Of Pharmacy And Technology. 2018. P. 3099. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2018.00569.3](http://dx.doi.org/10.5958/0974-360x.2018.00569.3)
17. Oliver Rg. Occlusion (1995) Major M. Ash And Sigurd Ramfjord W.B. Saunders Company, Philadelphia. Price: 50.00, Isbn: 0-7216-5591-2 [Internet]. Vol. 18, The European Journal Of Orthodontics. 1996. P. 304–304. Available From: [Http://Dx.Doi.Org/10.1093/Ejo/18.3.304](http://dx.doi.org/10.1093/ejo/18.3.304)
18. Ganapathy Dm, Kannan A, Venugopalan S. Effect Of Coated Surfaces Influencing Screw Loosening In Implants: A Systematic Review And Meta-Analysis [Internet]. Vol. 8, World Journal Of Dentistry. 2017. P. 496–502. Available From: [Http://Dx.Doi.Org/10.5005/Jp-Journals-10015-1493](http://dx.doi.org/10.5005/Jp-Journals-10015-1493)
19. Pasricha N, Sidana V, Bhasin S, Makkar M. Canine Protected Occlusion [Internet]. Vol. 3, Indian Journal Of Oral Sciences. 2012. P. 13. Available From: [Http://Dx.Doi.Org/10.4103/0976-6944.101670](http://dx.doi.org/10.4103/0976-6944.101670)
20. Sidana V, Bhasin S, Makkar M, Pasricha N. Group Function Occlusion [Internet]. Vol. 3, Indian Journal Of Oral Sciences. 2012. P. 124. Available From: [Http://Dx.Doi.Org/10.4103/0976-6944.111173](http://dx.doi.org/10.4103/0976-6944.111173)
21. Subasree S, Murthykumar K, Dhanraj. Effect Of Aloe Vera In Oral Health-A Review [Internet]. Vol. 9, Research Journal Of Pharmacy And Technology. 2016. P. 609. Available From: [Http://Dx.Doi.Org/10.5958/0974-360x.2016.00116.5](http://dx.doi.org/10.5958/0974-360x.2016.00116.5)
22. Ashok V, Nallaswamy D, Benazir Begum S, Nesappan T. Lip Bumper Prosthesis For An Acromegaly Patient: A Clinical Report [Internet]. Vol. 14, The Journal Of Indian Prosthodontic Society. 2014. P. 279–82. Available From: [Http://Dx.Doi.Org/10.1007/S13191-013-0339-6](http://dx.doi.org/10.1007/S13191-013-0339-6)
23. Hafeez N, Others. Accessory Foramen In The Middle Cranial Fossa. Research Journal Of Pharmacy And Technology. 2016;9(11):1880.
24. Krishnan Rp, Ramani P, Sherlin Hj, Sukumaran G, Ramasubramanian A, Jayaraj G, Et Al. Surgical Specimen Handover From Operation Theater To Laboratory: A Survey. Ann Maxillofac Surg. 2018 Jul;8(2):234–8.
25. Somasundaram S, Ravi K, Rajapandian K, Gurunathan D. Fluoride Content Of Bottled Drinking Water In Chennai, Tamilnadu. J Clin Diagn Res. 2015;9(10):Zc32.
26. Felicita As, Sumathi Felicita A. Orthodontic Extrusion Of Ellis Class Viii Fracture Of Maxillary Lateral Incisor – The Sling Shot Method [Internet]. Vol. 30, The Saudi Dental Journal. 2018. P. 265–9. Available From: [Http://Dx.Doi.Org/10.1016/J.Sdentj.2018.05.001](http://dx.doi.org/10.1016/J.Sdentj.2018.05.001)
27. Kumar S, Rahman R. Knowledge, Awareness, And Practices Regarding Biomedical Waste Management Among Undergraduate Dental Students. Asian J Pharm Clin Res. 2017 Aug 1;10(8):341.
28. Gurunathan D, Shanmugaavel Ak. Dental Neglect Among Children In Chennai. J Indian Soc Pedod Prev Dent. 2016 Oct 1;34(4):364.
29. Sneha S, Others. Knowledge And Awareness Regarding Antibiotic Prophylaxis For Infective Endocarditis Among Undergraduate Dental Students. Asian Journal Of Pharmaceutical And Clinical Research. 2016;154–9.
30. Dhinesh B, Isaac Joshuaramesh Lalvani J, Parthasarathy M, Annamalai K. An Assessment On Performance, Emission And Combustion Characteristics Of Single Cylinder Diesel Engine Powered By Cymbopogon Flexuosus Biofuel. Energy Convers Manage. 2016 Jun 1;117:466–74.
31. Choudhari S, Thenmozhi Ms. Occurrence And Importance Of Posterior Condylar Foramen. Laterality. 2016;8:11–43.
32. Paramasivam A, Vijayashree Priyadharsini J, Raghunandhakumar S. N6-Adenosine Methylation (M6a): A Promising New Molecular Target In Hypertension And Cardiovascular Diseases. Hypertens Res. 2020 Feb;43(2):153–4.
33. Wu F, Zhu J, Li G, Wang J, Veeraraghavan Vp, Krishna Mohan S, Et Al. Biologically Synthesized Green Gold Nanoparticles From Siberian Ginseng Induce Growth-Inhibitory Effect On Melanoma Cells (B16). Artif Cells Nanomed Biotechnol. 2019 Dec;47(1):3297–305.
34. Palati S, Ramani P, Shrelin H, Sukumaran G, Ramasubramanian A, Don Kr, Et Al. Knowledge, Attitude And Practice Survey On The Perspective Of Oral Lesions And Dental Health In Geriatric Patients Residing In Old Age Homes [Internet]. Vol. 31, Indian Journal Of Dental Research. 2020. P. 22. Available From: [Http://Dx.Doi.Org/10.4103/Ijdr.Ijdr\\_195\\_18](http://dx.doi.org/10.4103/Ijdr.Ijdr_195_18)
35. Saravanan M, Arokiyaraj S, Lakshmi T, Pugazhendhi A. Synthesis Of Silver Nanoparticles From Phenerochaete Chrysosporium (Mtcc-787) And Their Antibacterial Activity Against Human Pathogenic Bacteria. Microb Pathog. 2018 Apr;117:68–72.
36. Govindaraju L, Gurunathan D. Effectiveness Of Chewable Tooth Brush In Children-A Prospective Clinical Study. J Clin Diagn Res. 2017;11(3):Zc31.
37. Vijayakumar Jain S, Muthusekhar Mr, Baig Mf, Senthilnathan P, Loganathan S, Abdul Wahab Pu, Et Al. Evaluation Of Three-Dimensional Changes In Pharyngeal Airway Following Isolated Lefort One Osteotomy For The Correction Of Vertical Maxillary Excess: A Prospective Study. J Maxillofac Oral Surg. 2019

Mar;18(1):139–46.

38. Alexander Pc. Analysis Of The Cuspid Protective Occlusion [Internet]. Vol. 13, The Journal Of Prosthetic Dentistry. 1963. P. 309–17. Available From: [Http://Dx.Doi.Org/10.1016/0022-3913\(63\)90176-8](http://dx.doi.org/10.1016/0022-3913(63)90176-8)
39. Alexander Pc. The Periodontium And The Canine Function Theory [Internet]. Vol. 18, The Journal Of Prosthetic Dentistry. 1967. P. 571–8. Available From: [Http://Dx.Doi.Org/10.1016/0022-3913\(67\)90223-5](http://dx.doi.org/10.1016/0022-3913(67)90223-5)
40. Sapkota B, Gupta A. Pattern Of Occlusal Contacts In Lateral Excursions (Canine Protection Or Group Function). Kathmandu Univ Med J . 2014 Jan;12(45):43–7.
41. Schuyler Ch. The Function And Importance Of Incisal Guidance In Oral Rehabilitation [Internet]. Vol. 86, The Journal Of Prosthetic Dentistry. 2001. P. 219–32. Available From: [Http://Dx.Doi.Org/10.1067/Mpr.2001.118493](http://dx.doi.org/10.1067/Mpr.2001.118493)
42. Scaife Rr, Holt Je. Natural Occurrence Of Cuspid Guidance [Internet]. Vol. 22, The Journal Of Prosthetic Dentistry. 1969. P. 225–9. Available From: [Http://Dx.Doi.Org/10.1016/0022-3913\(69\)90249-2](http://dx.doi.org/10.1016/0022-3913(69)90249-2)
43. Parnia F, Yazdani J, Fakour P, Mahboub F, Pakdel Smv. Comparison Of The Maximum Hand-Generated Torque By Professors And Postgraduate Dental Students For Tightening The Abutment Screws Of Dental Implants [Internet]. Vol. 12, Journal Of Dental Research, Dental Clinics, Dental Prospects. 2018. P. 190–5. Available From: [Http://Dx.Doi.Org/10.15171/Joddd.2018.029](http://dx.doi.org/10.15171/Joddd.2018.029)
44. Ingervall B. Tooth Contacts On The Functional And Nonfunctional Side In Children And Young Adults [Internet]. Vol. 17, Archives Of Oral Biology. 1972. P. 191–In21. Available From: [Http://Dx.Doi.Org/10.1016/0003-9969\(72\)90147-1](http://dx.doi.org/10.1016/0003-9969(72)90147-1)
45. Rinchuse Dj, Kandasamy S, Sciote J. A Contemporary And Evidence-Based View Of Canine Protected Occlusion [Internet]. Vol. 132, American Journal Of Orthodontics And Dentofacial Orthopedics. 2007. P. 90–102. Available From: [Http://Dx.Doi.Org/10.1016/J.Ajodo.2006.04.026](http://dx.doi.org/10.1016/J.Ajodo.2006.04.026)
46. O’leary Tj, Shanley Db, Drake Rb. Tooth Mobility In Cuspid-Protected And Group-Function Occlusions [Internet]. Vol. 27, The Journal Of Prosthetic Dentistry. 1972. P. 21–5. Available From: [Http://Dx.Doi.Org/10.1016/0022-3913\(72\)90169-2](http://dx.doi.org/10.1016/0022-3913(72)90169-2)
47. Panek H, Matthews-Brzozowska T, Nowakowska D, Panek B, Bielicki G, Makacewicz S, Et Al. Dynamic Occlusions In Natural Permanent Dentition. Quintessence Int. 2008 Apr;39(4):337–42.
48. Vijayashree Priyadharsini J. In Silico Validation Of The Non-Antibiotic Drugs Acetaminophen And Ibuprofen As Antibacterial Agents Against Red Complex Pathogens. J Periodontol. 2019 Dec;90(12):1441–8.
49. Pc J, Marimuthu T, Devadoss P. Prevalence And Measurement Of Anterior Loop Of The Mandibular Canal Using Cbct: A Cross Sectional Study. Clin Implant Dent Relat Res [Internet]. 2018; Available From: [Https://Europepmc.Org/Article/Med/29624863](https://europepmc.org/article/med/29624863)
50. Ramesh A, Varghese S, Jayakumar Nd, Malaiappan S. Comparative Estimation Of Sulfiredoxin Levels Between Chronic Periodontitis And Healthy Patients - A Case-Control Study. J Periodontol. 2018 Oct;89(10):1241–8.
51. 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.
52. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation Of Salivary Metabolomics In Oral Leukoplakia And Oral Squamous Cell Carcinoma. J Oral Pathol Med. 2019 Apr;48(4):299–306.
53. Ezhilarasan D, Apoorva Vs, Ashok Vardhan N. Syzygium Cumini Extract Induced Reactive Oxygen Species-Mediated Apoptosis In Human Oral Squamous Carcinoma Cells. J Oral Pathol Med. 2019 Feb;48(2):115–21.
54. 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. Clin Oral Investig. 2020;1–6.
55. Samuel Sr. Can 5-Year-Olds Sensibly Self-Report The Impact Of Developmental Enamel Defects On Their Quality Of Life? Int J Paediatr Dent. 2021 Mar;31(2):285–6.
56. R H, Hannah R, Ramani P, Ramanathan A, R Jm, Gheena S, Et Al. Cyp2 C9 Polymorphism Among Patients With Oral Squamous Cell Carcinoma And Its Role In Altering The Metabolism Of Benzo[A]Pyrene [Internet]. Vol. 130, Oral Surgery, Oral Medicine, Oral Pathology And Oral Radiology. 2020. P. 306–12. Available From: [Http://Dx.Doi.Org/10.1016/J.Ooooo.2020.06.021](http://dx.doi.org/10.1016/J.Ooooo.2020.06.021)
57. Chandrasekar R, Chandrasekhar S, Sundari Kks, Ravi P. Development And Validation Of A Formula For Objective Assessment Of Cervical Vertebral Bone Age. Prog Orthod. 2020 Oct 12;21(1):38.
58. Vijayashree Priyadharsini J, Smiline Girija As, Paramasivam A. In Silico Analysis Of Virulence Genes In An Emerging Dental Pathogen A. Baumannii And Related Species. Arch Oral Biol. 2018 Oct;94:93–8.



Prevalence Of Different Occlusal Schemes For Pre And Post Treatment In Tooth Supported Full Mouth  
Rehabilitation: A Retrospective Study

