

Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of Thiruvallur, Tamil Nadu

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ABSTRACT

Complete Edentulism Is Defined As The Loss Of All Permanent Natural Teeth. Loss Or Missing Teeth Have An Influence On Any Individual Self-Reflection Such As Their Quality Of Oral Health From The Perspective Of Their Level Of Biological, Psychological, And Social Status. The Patient With A Complete Edentulism Percentage Is Expected To Decline In The Upcoming Decades Due To Improvement In Oral Health, Meanwhile, Their Number Will Increase Due To An Increase In The Aging Population. Hence, The Aim Of This Study Was To Assess The Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of Thiruvallur, Tamil Nadu. A Retrospective Cross-Sectional Study Was Conducted Among Complete Edentulous Patients Who Reported To Private Dental Hospital. Data Collection Was Obtained From Dental Information Archiving Software Database (DIAS) By Reviewing The Patient Records Of 86,000 Patients Between June 2019 And June 2020. Parameters Were Assessed For Age, Gender, And Complete Edentulism. The Collected Data Were Tabulated In Excel Sheets Which Were Transcribed To SPSS Version 20 For Statistical Analysis. Among 392 Patients, 61 To 70 Years Age Group Patients Showed A Higher Prevalence Of Complete Edentulism (39.3%). Males (55.6%) Showed Higher Prevalence Than Females (48.5%).

Keywords: Age, Complete Edentulism, Oral Health, Prevalence, Tooth Loss

1. Introduction

Loss Or Missing Teeth Have An Influence On Any Individual Self-Reflection Such As Their Quality Of Oral Health From The Perspective Of Their Level Of Biological, Psychological, And Social Status.^{1,2} In Recent Decades, The Prevalence And Occurrence Of The Missing Tooth Have Declined Significantly In Most Of The Countries.^{3,4} There Is Significant Variation In The Distribution Of Missing Teeth. These Variations Of Distribution May Be Attributed To The Increased Availability And Low Accessibility To The Prevention Of Oral Diseases And Oral Health Programs, Including The Lack Of Importance Of Oral Health Awareness Among Communities.⁵ The Evaluation On The Missing Tooth Trends, Different Occurrences Between Populations Based On Gender, Age May Give Benefit On Current Information About Tooth Loss Risk Factors, Changes In Community Oral Health Status.⁶

Tooth Loss Or Edentulism Is A World Public Health Problem Due To Its Higher Prevalence Which Occurs In More Than 10% Of Individuals Aged 50 Years And Above.⁷⁻⁹ Tooth Loss Occurs Due To Dental Caries And Periodontal Related Diseases And Missing Teeth Will Give Undesirable Causes To The Mental Health Of The Patients, Which Occur Due To The Changes Occurring In Both Functional And Aesthetics.¹⁰ In Addition, Causes That May Lead To The Loss Of Teeth Are Age Factors, Menstruation Including Pregnancy, Old Age Female Living Alone And Males With Cigarette Smoking Habits Which May Result In Edentulism Or Losing Teeth In Their Life.^{10,11}

Hygienic Status Of People In Communities Can Be Determined By Their Edentulism, As The Low Culture Societies Can Be Attributed As Having Widespread Edentulism. In Taking Consideration Of Scientific Advances, And Increasing Human Longevity As The Component Of Public Health, The Person Is More Prone To Develop Edentulism Due To Their Inclination In Soft Foods Consumption.^{10,12,13}

The Edentulism Also Serves As The Terminal Sign Of Any Ongoing Oral And Systemic Diseases Of The Patients.¹² The Loss Of Teeth Are Attributed To The Multiple Interactions Of Systemic And Oral Health, Genetic Influence As Well As The Environment Factors.¹² The Correlation Between Systemic And Oral Health Such As The Occurrence Of Chronic Diseases Such As Uncontrolled Diabetes Mellitus Type 2, Hypertension, HIV Positive Status, Smoking, Obesity Or Poor Mental Health May Lead To Increased Risk Of Edentulism In Various Age Groups.¹⁴ Gender And Different Ethnicity Also Has Been Proposed By Various Studies As One Of The Risk Factors That Caused The Edentulism.¹²

The Health Care And Its Delivery Improvement In The Community Which Results In The Inclination Of The Elderly Population And It Is Being The Fastest Growing Population In Our Community.¹⁵ In The Current Year, India Is Subjected To Have More Than 158 Million Elderly Population, And It Is The Second-Largest Number Worldwide After China For Their 230 Million Elderly.¹⁶ Complete Edentulism Is One Of The Key Indicators For Oral Health In Our Population, In The Elderly Especially.¹⁷ In Recent Studies, Conducted By Researchers On Oral Health In Elderly Population, Showing That There Are Various Dismissive Effects On Health-Related Quality Of Life Resulted From Their Complete Loss Of Teeth.¹⁸

The European Countries Depicted A High Percentage Of The Edentulism Rate If Compared To The Other Continents In The World. This Includes Scotland (85%), The Netherlands (83%), England (74-79%), Ireland (72%), Northern Ireland (69%), Denmark (68%), Finland (67%), And Norway (57%).^{19,20} Several Studies Have Shown That There Is Consistency In The Higher Number Of Complete Edentulism To The Increase In The Age Of Females When Compared To Males.^{21,22} Database In The World Health Organization (WHO) Showing That Prevalent Of Dental Caries Are 100% In Communities Internationally, A Severe Periodontal Disease With An Estimated 5% To 20% Affected The Population And The Complete Edentulism In The International Population Has Been Estimated Between 7% And 69%.¹² Previously Our Team Has A Rich Experience In Working On Various Research Projects Across Multiple Disciplines The ²³⁻²⁵²⁶⁻³⁷.

The Patient With A Complete Edentulism Percentage Is Expected To Decline In The Upcoming Decades Due To Improvement In Oral Health, Meanwhile, Their Number Will Be Increased Due To An Increase In The Aging Population³⁸. Hence, This Study Was To Evaluate The Prevalence Of Complete Edentulism Among Patients Based On Age And Gender.

2. Materials And Methods

A Retrospective Cross-Sectional Study Was Performed Among Completely Edentulous Patients Visiting Private Dental Hospital, Chennai. Ethical Approval For The Study Was Granted By The Institutional Ethical Committee, IEC Approval Number: SDC/SIHEC/2020/DIAS DATA/0619-0320. Data Were Collected By Reviewing The 86,000 Patient Records Between June 2019 To April 2020 Based On Data Availability From

Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of Thiruvallur, Tamil Nadu

Dental Information Archiving Software (DIAS) Which 392 Patients (218 Males And 174 Females) Aged Between 30 To 80 Years Old That Have Complete Edentulism, Age, And Gender Were Included In This Study. Patients Were Randomly Divided Into Five Groups, Group 1- 30 To 40; Group 2- 41 To 50 Years; Group 3- 51 To 60 Years; Group 4- 61 To 70 Years; Group 5- >71 Years. Partial Edentulism And Incomplete Data Were Excluded From The Study. Oral Examinations Were Analyzed Thoroughly And Cross Verified With Intraoral Photographs. The Collected Data Were Tabulated In Excel Sheets And Were Imported To SPSS Version 20 (IBM Corporation). Descriptive Statistics And Chi Square Test Was Used To Determine The Correlation Between The Variables Where P Value < 0.05 Is Considered Statistically Significant With A Confidence Interval Of 95%.

3. Results And Discussion

Previously Our Team Has Conducted Numerous Original Studies ^{12,39-52} Over The Past 5 Years. The Idea For This Study Stemmed From The Current Interest In Our Community. Complete Edentulism Or Tooth Loss May Prohibit Eating As Well As Limit Intake Of Foods Which Affect Dietary Intake, Nutrition Status And Compromise General Health Of The Patient. ^{53,54}

In The Present Study, Out Of 392 Patients Of Complete Edentulism Were Examined Based On Gender And Age Groups. It Was Found That 218 (55.6%) Were Males And 174 (44.4%) Were Females. The Prevalence Of Complete Edentulism Was Higher In Male Than Females (Figure 1). These Results Were Similar To Other Studies Conducted By Kaira Et Al.¹⁹, Sonkesariya Et Al.⁵⁵ Basnyat Et Al.⁵⁶, Nagaraj Et Al.¹⁵, Vadavadagi Et Al.⁵⁷ And Saha Et Al. ²⁰ Where Males Have A Higher Prevalence Of Total Population Compared To Females And Contradictory With The Study Conducted By Peltzer Et Al. ⁹ Incidence Of Complete Edentulism Was High Prevalence Among Age Groups Between 61 To 70 Years (39.3%) And Least Prevalence Rate Among 30-40 Years (3.3%) Of Age (Figure 2). Similar Studies Were Done By Al-Rafee⁵⁸ And Federal At Al.⁵⁹ There Was A Disparity With The Study Done By Douglass Et Al.⁶⁰, Sonkesariya Et Al.⁵⁵ And Peltzer Et Al.⁹ Where The Incidence Of Complete Edentulism Was More Than 50 Years Of Age.

In This Present Study, Patients With Complete Edentulism Were Analyzed And Correlated With Their Age Groups And Genders, P-Value Is Less Than 0.05. Hence The Result Was Statistically Significant. Several Studies Agreed That The Incidence Of Edentulism Related To Low Levels Of Education And Socioeconomic Status Indicates More Risks Of Becoming Edentulous.⁶¹⁻⁶³ According To Few Studies, It Was Observed That Patients With Higher-Income Levels Approach Private Dental Clinics.^{64,65} Those Living In Rural Areas, Have Less Access To Dental Care Services When Compared To Their Urban Areas.⁶⁶ Our Institution Is Passionate About High Quality Evidence Based Research And Has Excelled In Various Fields (⁶⁷⁻⁷⁷).

The Limitations Of The Present Study Is The Limited Sample Size And Was Conducted In An Institution-Based Set-Up And A Single Centered Study Was Used. It Also Does Not Include Other Ethnic Populations. None Of The Nutritional Status And Systemic Conditions Assessed During The Examination. Hence, Further Study To Assess The Nutritional Status And Systemic Condition In The Larger Population And Plan In A Better Way By Including The Multi-Centre Population.

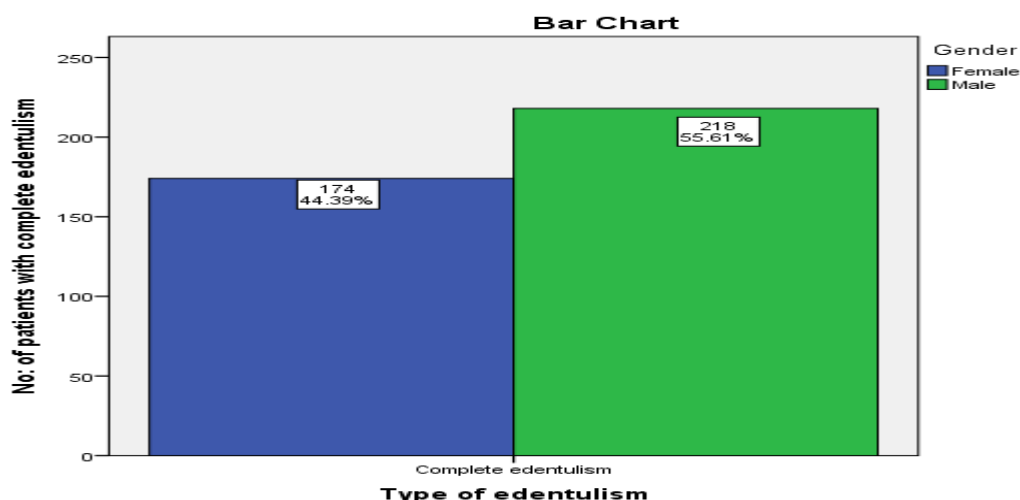


Figure 1: Bar Chart Depicting The Gender Wise Distribution Of Patients With Complete Edentulism. X-Axis Denotes The Genders Of Patients And Y-Axis Denotes The Number Of Patients Reported With Complete Edentulism. Based On Gender, Male (Green Colour) Showed A Higher Prevalence (55.6%) Of Edentulism.

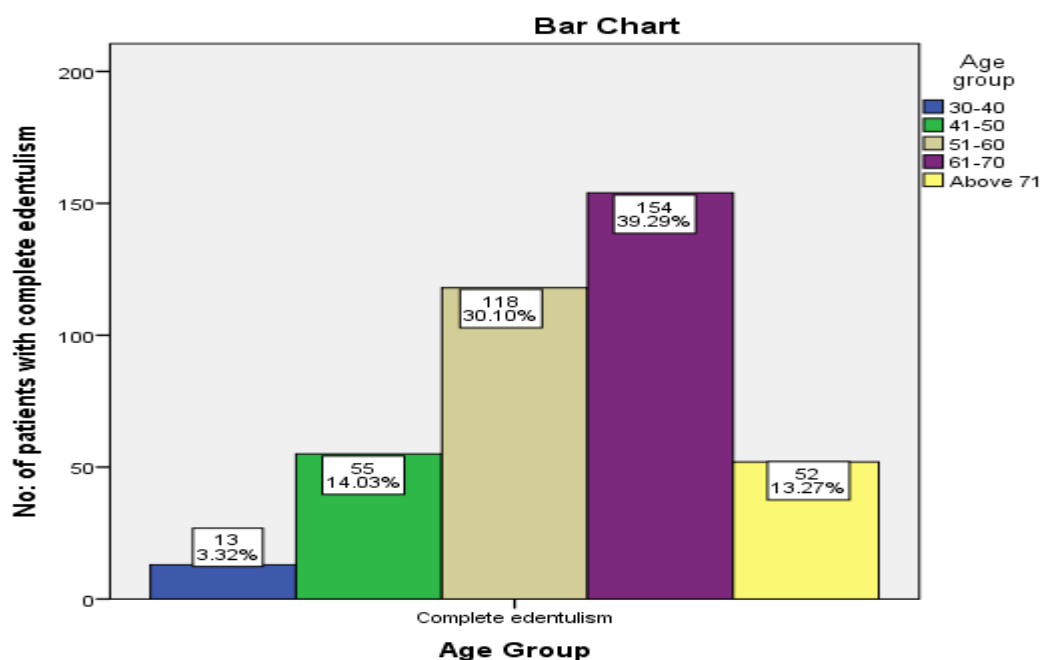


Figure 2 : Bar Chart Showing The Age Distribution On Patients Reported With Complete Edentulism. X-Axis Denotes The Age Group Of Patients And Y-Axis Denotes The Number Of Patients Reported With Complete Edentulism. Among Age Groups, 61 To 70 Years Old (Purple Colour) Shows High Prevalence Of Complete Edentulism (39.3%).

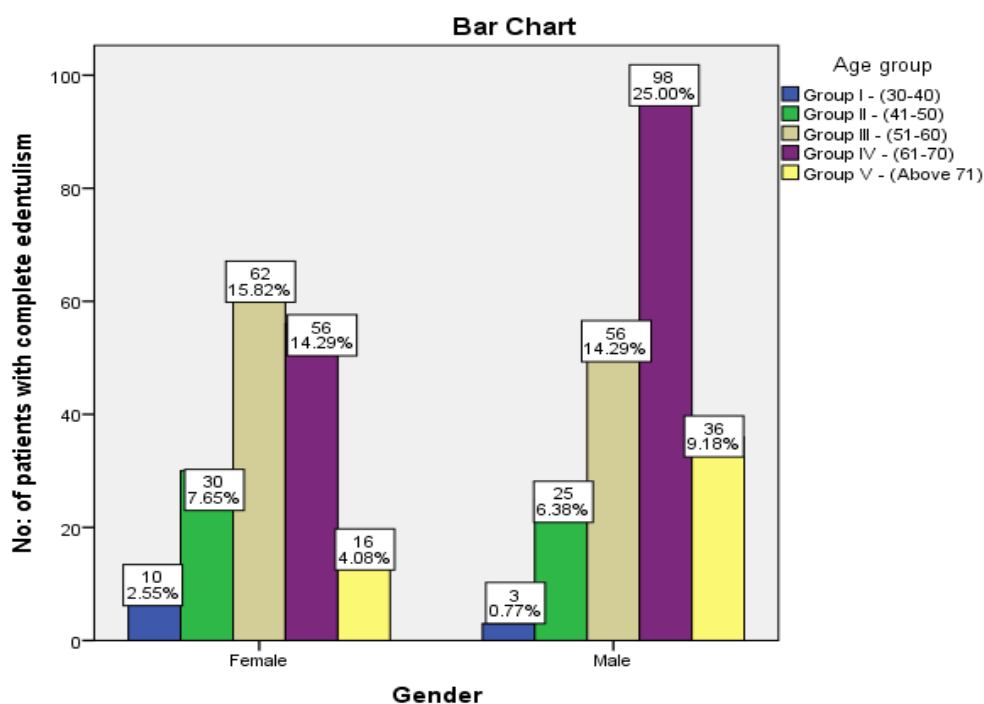


Figure 3: Bar Charts Represent The Association Between The Gender And The Different Age Groups. X-Axis Represents The Different Genders Of Patients With Different Age Groups And Y-Axis Represents The Number Of Patients Affected By Complete Edentulism. The Male Patients With Age 61 To 70 Years Old Most Affected

Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of Thiruvallur, Tamil Nadu

With Complete Edentulism With A Percentage Of 39.3%, Meanwhile In Female Patients, Age 51 To 60 Years Old Were More Affected. Chi-Square Test Was Done, P-Value=0.001, $P < 0.05$, Which Is Statistically Significant. There Is Association Between The Gender And The Different Age Groups Of Patients With Complete Edentulism.

4. Conclusion

Based On The Results Of The Present Study, It Can Be Concluded That There Was A Higher Prevalence Of Complete Edentulism Among The Population Of 61-70 Years, With Higher Predilection In Males. Complete Edentulism Increased In Elderly Patients Which Would Increase The Need For Prosthetic Treatment. Awareness And Proper Dental Education On Oral Hygiene To Patients May Avoid Complete Edentulousness And Inturn Would Improve The Quality Of Life.

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6. Conflict Of Interest

This Research Project Is Self-Funded And Is Not Sponsored Or Aided By Any Third Party. There Is No Conflict Of Interest.

7. References

1. Rasidi MQZBM, Mohamad Qulam Zaki Bin, Gheena S. The Prevalence Of Dental Caries In 18 To 30 Years Individual Associated With Socio-Economic Status In An Outpatient Population Visiting A Hospital In Chennai [Internet]. Vol. 11, Biomedical And Pharmacology Journal. 2018. P. 1295–300. Available From: [Http://Dx.Doi.Org/10.13005/Bpj/1491](http://Dx.Doi.Org/10.13005/Bpj/1491)
2. Rasidi M. Review On History Of Complete Denture. *J Pharm Res.* 2016;9(8):069–1062.
3. Rasidi MQZBM, Varma MDA, Others. Knowledge, Attitude And Practice On Hyposalivation In Complete Denture Patients Among Dental Interns In Chennai, India. *Res J Pharm Biol Chem Sci.* 2017;9(2):225.
4. Madhankumar S, Mohamed K, Natarajan S, Kumar VA, Athiban I, Padmanabhan TV. Prevalence Of Partial Edentulousness Among The Patients Reporting To The Department Of Prosthodontics Sri Ramachandra University Chennai, India: An Epidemiological Study. *J Pharm Bioallied Sci.* 2015 Aug;7(Suppl 2):S643–7.
5. Shamdol Z, Ismail NM, Hamzah NT, Ismail AR. Prevalence And Associated Factors Of Edentulism Among Elderly Muslims In Kota Bharu, Kelantan, Malaysia. *J IMA* [Internet]. 2008;40(4). Available From: [Http://Www.Scholarlyexchange.Org/Ojs/Index.Php/JIMA/Article/View/4431](http://Www.Scholarlyexchange.Org/Ojs/Index.Php/JIMA/Article/View/4431)
6. Al-Dwairi ZN. Complete Edentulism And Socioeconomic Factors In A Jordanian Population. *Int J Prosthodont.* 2010 Nov;23(6):541–3.
7. Pengpid S, Peltzer K. The Prevalence Of Edentulism And Their Related Factors In Indonesia, 2014/15. *BMC Oral Health.* 2018 Jul 3;18(1):118.
8. Tyrovolas S, Koyanagi A, Panagiotakos DB, Haro JM, Kassebaum NJ, Chrepa V, Et Al. Population Prevalence Of Edentulism And Its Association With Depression And Self-Rated Health. *Sci Rep.* 2016 Nov 17;6:37083.
9. Peltzer K, Hewlett S, Yawson AE, Moynihan P, Preet R, Wu F, Et Al. Prevalence Of Loss Of All Teeth

(Edentulism) And Associated Factors In Older Adults In China, Ghana, India, Mexico, Russia And South Africa. *Int J Environ Res Public Health*. 2014 Oct 30;11(11):11308–24.

10. Shabnam Hosseini, Abolfazl Bagheri, Firouz Amani, Omid Deljoo. Prevalence Of Complete Edentulism And Associated Factors In Ardabil City, 2013. *Journal Of Research In Medical And Dental Science*. 2015;3(1):17–21.
11. Musacchio E, Perissinotto E, Binotto P, Sartori L, Silva-Netto F, Zambon S, Et Al. Tooth Loss In The Elderly And Its Association With Nutritional Status, Socio-Economic And Lifestyle Factors. *Acta Odontol Scand*. 2007 Apr;65(2):78–86.
12. Latif TM, Vieira AR. Risk Factors And Comorbidities Associated With Complete Edentulism In Individuals Younger Than Fifty Years Of Age. *Journal Of Dentistry And Oral Health*. 2017;1(1):1.
13. Salehi P, Shahidi S, Majdi B, Omidi M, Gavareshki SR, Hamedani S, Et Al. Evaluation Of The Relationship Between Airway Volumes And Vertical Facial Growth Patterns In Adult Patients [Internet]. Vol. 4, *Journal Of Dentomaxillofacial Radiology, Pathology And Surgery*. 2016. P. 20–30. Available From: [Http://Dx.Doi.Org/10.18869/Acadpub.3dj.4.4.20](http://Dx.Doi.Org/10.18869/Acadpub.3dj.4.4.20)
14. Medina-Solís CE, Pontigo-Loyola AP, Pérez-Campos E, Hernández-Cruz P, Avila-Burgos L, Mendoza-Rodríguez M, Et Al. Edentulism And Other Variables Associated With Self-Reported Health Status In Mexican Adults. *Med Sci Monit*. 2014 May 23;20:843–52.
15. Nagaraj E, Mankani N, Madalli P, Astekar D. Socioeconomic Factors And Complete Edentulism In North Karnataka Population. *J Indian Prosthodont Soc*. 2014 Mar;14(1):24–8.
16. Goel PK, Garg SK, Singh JV, Bhatnagar M, Chopra H, Bajpai SK, Et Al. Unmet Needs Of The Elderly In A Rural Population Of Meerut. *Indian J Community Med*. 2003;28(4):165–6.
17. Felton DA. Edentulism And Comorbid Factors. *Tex Dent J*. 2010 Apr;127(4):389–401.
18. Al Hamdan E, Fahmy MM. Socioeconomic Factors And Complete Edentulism For Female Patients At King Saud University, Riyadh, Saudi Arabia. *Tanta Dental Journal*. 2014 Dec 1;11(3):169–73.
19. Kaira LS, Dabral E. Prevalence Of Complete Edentulism Among Udaipur Population Of India. *The Saudi Journal For Dental Research*. 2014 Jul 1;5(2):139–45.
20. Saha MK, Bansal S, Singh R, Chahar VS, Gupta R, Nagar G. Prevalence Of Complete Edentulousness Among Rural And Urban Population Of Malwa, Madhya Pradesh. *International Journal Of Oral Care And Research*. April-June 2018;6(2):74–8.
21. Esan TA, Olusile AO, Akeredolu PA, Esan AO. Socio-Demographic Factors And Edentulism: The Nigerian Experience. *BMC Oral Health*. 2004 Nov 22;4(1):3.
22. Kalk W, Van Rossum GM, Van Waas MA. Edentulism And Preventive Goals In The Treatment Of Mutilated Dentition. *Int Dent J*. 1990 Oct;40(5):267–74.
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

Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of
Thiruvallur, Tamil Nadu

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 Chryso sporium (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. Zaigham AM, Muneer MU. Pattern Of Partial Edentulism And Its Association With Age And Gender. *Pakistan Oral & Dental Journal [Internet].* 2010;30(1). Available From: [Http://Search.Proquest.Com/Openview/13711dba575e9848f8d867781716c224/1?Pq-Origsite=Gscholar&Cbl=616533&Casa_Token=Kijblcxvs18aaaaa:Zpzjy5oqmzanoeekzjmgcogowecuvlpmxxpmu5sg6xzoc5reb1mwjyayct_0x6lxloudaf5t-8ea](http://search.proquest.com/openview/13711dba575e9848f8d867781716c224/1?pq-origsite=gscholar&cbl=616533&casa_token=Kijblcxvs18aaaaa:Zpzjy5oqmzanoeekzjmgcogowecuvlpmxxpmu5sg6xzoc5reb1mwjyayct_0x6lxloudaf5t-8ea)
39. Ashok V, Nallaswamy D, Benazir Begum S, Nesappan T. Lip Bumper Prosthesis For An Acromegaly Patient: A Clinical Report. *J Indian Prosthodont Soc.* 2014 Dec;14(Suppl 1):279-82.
40. Venugopalan S, Ariga P, Aggarwal P, Viswanath A. Case Report: Magnetically Retained Silicone Facial Prosthesis. *Niger J Clin Pract.* 2014 Mar 27;17(2):260-4.
41. 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.

42. 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)
43. 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)
44. 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)
45. 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)
46. 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)
47. 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)
48. Pandurangan KK, Veeraiyan DN, Nesappan T. In Vitro Evaluation Of Fracture Resistance And Cyclic Fatigue Resistance Of Computer-Aided Design-On And Hand-Layered Zirconia Crowns Following Cementation On J Indian Orthod Soc [Internet]. 2020; Available From: [Http://Www.J-Ips.Org/Article.Asp?Issn=0972-4052;Year=2020;Volume=20;Issue=1;Spage=90;Epage=96;Aulast=Pandurangan](http://Www.J-Ips.Org/Article.Asp?Issn=0972-4052;Year=2020;Volume=20;Issue=1;Spage=90;Epage=96;Aulast=Pandurangan)
49. Inchara R, Ganapathy D, Kumar PK. Preference Of Antibiotics In Pediatric Dentistry. Drug Invent Today. 2019;11:1495–8.
50. Anjum AS, Ganapathy D, Kumar K. Knowledge Of The Awareness Of Dentists On The Management Of Burn Injuries On The Face. Drug Invention Today [Internet]. 2019;11(9). Available From: [Https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/337223550_Knowledge_Of_The_Awareness_Of_Dentists_On_The_Management_Of_Burn_Injuries_On_The_Face/Links/5dcbff5fa6fdc5750470755/Knowledge-Of-The-Awareness-Of-Dentists-On-The-Management-Of-Burn-Injuries-On-The-Face.Pdf](https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/337223550_Knowledge_Of_The_Awareness_Of_Dentists_On_The_Management_Of_Burn_Injuries_On_The_Face/Links/5dcbff5fa6fdc5750470755/Knowledge-Of-The-Awareness-Of-Dentists-On-The-Management-Of-Burn-Injuries-On-The-Face.Pdf)
51. Ramya G, Pandurangan K, Ganapathy D. Correlation Between Anterior Crowding And Bruxism-Related Parafunctional Habits. Drug Invention Today [Internet]. 2019;12(10). Available From: [Https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/337223674_Correlation_Between_Anterior_Crowding_And_Bruxism-Related_Parafunctional_Habits/Links/5dcc083a92851c81804bf0fd/Correlation-Between-Anterior-Crowding-And-Bruxism-Related-Parafunctional-Habits.Pdf](https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/337223674_Correlation_Between_Anterior_Crowding_And_Bruxism-Related_Parafunctional_Habits/Links/5dcc083a92851c81804bf0fd/Correlation-Between-Anterior-Crowding-And-Bruxism-Related-Parafunctional-Habits.Pdf)
52. Shree Y, Kumar K, Ganapathy D. Awareness Of Basic Life Support Among Dental Students. Researchgate.Net [Internet]. Available From: [Https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/339873903_Awareness_Of_Basic_Life_Support_Among_Dental_Students/Links/5e69b30e458515c5de628420/Awareness-Of-Basic-Life-Support-Among-Dental-Students.Pdf](https://Www.Researchgate.Net/Profile/Kiran_Pandurangan2/Publication/339873903_Awareness_Of_Basic_Life_Support_Among_Dental_Students/Links/5e69b30e458515c5de628420/Awareness-Of-Basic-Life-Support-Among-Dental-Students.Pdf)
53. Hutton B, Feine J, Morais J. Is There An Association Between Edentulism And Nutritional State? Journal-Canadian Dental Association. 2002;68(3):182–7.
54. Sheiham A, Steele J. Does The Condition Of The Mouth And Teeth Affect The Ability To Eat Certain

Prevalence Of Complete Edentulism Among Patients Visiting The District Private Dental Hospital Of Thiruvallur, Tamil Nadu

Foods, Nutrient And Dietary Intake And Nutritional Status Amongst Older People? *Public Health Nutr.* 2001 Jun;4(3):797–803.

55. Sonkesariya S, Jain D, Shakya P, Agrawal R, Prasad SVS. Prevalence Of Dentulism, Partial Edentulism And Complete Edentulism In Rural And Urban Population Of Malwa Region Of India: A Population-Based Study. *Int J Prosthodont Restor Dent.* 2014;4(4):112–9.
56. Basnyat KCS, Sapkota B, Shrestha S. Epidemiological Survey On Edentulousness In Elderly Nepalese Population. *Kathmandu Univ Med J.* 2014 Oct;12(48):259–63.
57. Vadavadagi SV, Srinivasa H, Goutham GB, Hajira N, Lahari M, Reddy GTP. Partial Edentulism And Its Association With Socio-Demographic Variables Among Subjects Attending Dental Teaching Institutions, India. *J Int Oral Health.* 2015;7(Suppl 2):60–3.
58. Al-Rafee MA. The Epidemiology Of Edentulism And The Associated Factors: A Literature Review. *Journal Of Family Medicine And Primary Care.* 2020 Apr 1;9(4):1841.
59. Federal P, Group TDW, Others. Summary Report On The Findings Of The Oral Health Component Of The Canadian Health Measures Survey 2007--2009. Government Of Canada Publications. 2012;
60. Douglass C, Gillings D, Sollecito W, Gammon M. The Potential For Increase In The Periodontal Diseases Of The Aged Population. *J Periodontol.* 1983 Dec;54(12):721–30.
61. Eklund SA, Burt BA. Risk Factors For Total Tooth Loss In The United States; Longitudinal Analysis Of National Data. *J Public Health Dent.* 1994 Winter;54(1):5–14.
62. Shah VR, Shah DN, Parmar CH. Prosthetic Status And Prosthetic Need Among The Patients Attending Various Dental Institutes Of Ahmedabad And Gandhinagar District, Gujarat. *J Indian Prosthodont Soc.* 2012 Sep;12(3):161–7.
63. Tsitaishvili L, Margvelashvili V, Kalandadze M. EVALUATION OF EDENTULISM, INFLUENCE OF SOCIO-ECONOMIC, BEHAVIOURAL FACTORS AND GENERAL HEALTH ON PROSTHETIC STATUS OF ADULT POPULATION OF GEORGIA. In: 3rd EURASIAN MULTIDISCIPLINARY FORUM, EMF 2015 19-21 October, Tbilisi, Georgia. *Gruni.Edu.Ge;* 2015. P. 233.
64. Shah N, Parkash H, Sunderam KR. Edentulousness, Denture Wear And Denture Needs Of Indian Elderly-A Community-Based Study. *J Oral Rehabil.* 2004;31(5):467–76.
65. Palmqvist S, Söderfeldt B, Vigild M, Kihl J. Dental Conditions In Middle-Aged And Older People In Denmark And Sweden: A Comparative Study Of The Influence Of Socioeconomic And Attitudinal Factors [Internet]. Vol. 58, *Acta Odontologica Scandinavica.* 2000. P. 113–8. Available From: [Http://Dx.Doi.Org/10.1080/000163500429235](http://Dx.Doi.Org/10.1080/000163500429235)
66. Burt BA, Ismail AI, Morrison EC, Beltran ED. Risk Factors For Tooth Loss Over A 28-Year Period [Internet]. Vol. 69, *Journal Of Dental Research.* 1990. P. 1126–30. Available From: [Http://Dx.Doi.Org/10.1177/00220345900690050201](http://Dx.Doi.Org/10.1177/00220345900690050201)
67. 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.
68. 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)
69. 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.

70. 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.
71. 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.
72. 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.
73. 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.
74. 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.
75. 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.Oooo.2020.06.021](http://Dx.Doi.Org/10.1016/J.Oooo.2020.06.021)
76. 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.
77. 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.