

# A Protocol For Assessment of Body Mass Index, Serum Albumin And Serum Prealbumin Change In Elderly Edentulous Patients After Complete Denture Rehabilitation.

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**Abstract---** *The Aim of study is to determine the effect on Body Mass Index (BMI), Serum Albumin and Serum Prealbumin change after Complete Denture Rehabilitation in Elderly Edentulous Patients. Material and methodology: A Prospective Interventional of study is planned to determine the effect on patients BMI, Serum Albumin and Serum Prealbumin levels after Complete Denture rehabilitation. A sum total of 40 edentulous patients will be selected from the Out Patient Department (OPD) of the Department of Prosthodontics, Sharad Pawar Dental College, Sawangi, Wardha. All the patients will be provided written consent before their participation in the study (ANNEXURE I) the study was approved by institutional ethical committee- DMIMS (DU)/IEC/2018-19/7515. Statistical analysis: The data thus obtained will be tabulated for further statistical analysis. Data will be analyzed using descriptive and analytical statistical methods. Statistical significance of the mean differences between the measurements in the interval of 6 months will be tested using student paired t-test.*

**Keywords---** *Body Mass Index , Serum Albumin , Serum Prealbumin*

## I INTRODUCTION

The over-all elderly population (above 60yrs of age) of India is 103.9 million as per the 2016 MOSPI Report, which accounted 8.6% of total population. The National Oral Health Survey report states that 3.1% of the elderly population of rural and urban regions of Maharashtra is in need of complete denture prosthesis. These statistics are noteworthy enough to draw consideration to the needs of this population, which is showing an upward trend of growth.<sup>1</sup>

People of this age group show deterioration in metabolic and physiologic functions that affects the nutrition, which in return affects the general health, this qualifies nutrition as one of the vital deciding factor in geriatric age group. Foundation of life nowadays considered to be correlated with optimum consumption of daily meals according to their nutritional values. Nutritional levels are directly linked to the immunological defense system that may directly or indirectly be a contributing element for morbidity and mortality. Tooth loss reduces the mastication

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efficiency thereby causing to unfavorable changes in food preferences, which may increase the risk of malnutrition. Various studies have publicized association of tooth loss to loss of weight additionally reported the probability that reconstruction of occlusion function affects the nutritional levels in these individuals. On observation from the Out Patient record it was found that the elderly patients suffering with protein energy malnutrition (PEM) are 1-15% and the institutionalized geriatric group inclusive of 15-60% and much attention has been given to nutritional therapy in long-term care facilities<sup>2</sup>

Loss of teeth, Poor socioeconomic factors, physical functioning, inadequate diet, and degenerative diseases can cause PEM. In association with the recent trending tools of measuring includes BMI assessment and illness severity proved to be more reliable.

As the record keeping of the accurately measured changes in weights and other parameters may not be possible so clinicians came up with other reliable methods equally accurate laboratory methods involving plasma proteins namely serum albumin ,serum prealbumin and compared the values pre and post rehabilitation. This was done to assess the protein level change as it is assumed that the dietary habits change after complete denture rehabilitation causing rapid changes in protein levels. Serum Pre-albumin well-known as Transthyretin has a half-life in plasma of ~ 2 days, Serum Prealbumin being extremely sensitive to any change in protein energy status and concentration reveals latest dietary intake.<sup>3</sup> The main Purpose of study being evaluation of change in nutritional status in elderly edentulous patients before and after Complete Denture Rehabilitation using Body mass index, Serum Albumin, and Serum Prealbumin levels.

## **II RATIONALE:**

In the literature, there are various studies highlighting the effects of nutrition in geriatric health. There is need for the measurements of the nutrition levels through various methods like questionnaire's, anthropometric measurements, biochemical assessment. This study highlights the importance of nutrition levels change after complete denture rehabilitation in elderly edentulous. Through biochemical assessment prealbumin levels, albumin levels being the accurate and reliable assessment methods.

## **III OBJECTIVES:**

- To determine the BMI, Serum Albumin and Serum Prealbumin levels in elderly edentulous Patients before Complete Denture Rehabilitation.
- To determine the BMI, Serum Albumin and Serum Prealbumin levels in Elderly Edentulous Patients 6 months after Complete Denture Rehabilitation.
- Comparative evaluation of the BMI, Serum Albumin and Serum Prealbumin levels in Elderly Edentulous Patients before and after Complete Denture Rehabilitation.

#### **IV METHODOLOGY:**

A Prospective Interventional of study is planned to determine the effect on patients BMI, Serum Albumin and Serum Prealbumin levels after Complete Denture rehabilitation and will be carried out in the Department of Prosthodontics, Sharad Pawar Dental College and Hospital, Datta Meghe Institute of Medical Sciences, Deemed to be University. A sum total of 40 edentulous patients will be selected from the Out Patient Department (OPD) of the Department of Prosthodontics, Sharad Pawar Dental College, Sawangi, Wardha. All patients will be provided written consent before their participation in the study (ANNEXURE I) the study was approved by institutional ethical committee- DMIMS (DU)/IEC/2018-19/7515

**STUDY DESIGN:** Prospective Interventional study

**DURATION:** 2 years

**SAMPLE SIZE:** 40 patients (ANNEXURE II for sample size calculation)

#### **CRITERIA FOR INCLUSION:**

- Completely edentulous patients ranging in the age group between 50- 70 years.
- Patients agreeable to participate for the given interval of study.
- Patients agreeable to provide informed Consent.
- Patients with good general health, without any systemic diseases.
- Patients with history of extraction of the last tooth one year prior.

#### **CRITERIA FOR EXCLUSION:**

- Patients not readily participating in the study.
- Patients suffering from any Systemic diseases and Surgical or other Simultaneous Treatment influencing the overall nutritional status.
- Patients on Nutritional Supplements.

#### **EQUIPMENTS USED IN STUDY:**

#### **METHOD:**

- Human Prealbumin kit PA-300(CE), MODEL NO:BS-300
- Human Albumin kit ( Albumin Fluid Reagent -By Bromocresol green method)
- Red capped EDTA bulb for sample collection
- Weighing scale(SOSA Toughened Glass Electronic Digital Personal Body Weighing machine)
- Calculator (Casio)
- Height measuring scale(By Romson-medplusmart)

### **DATA SELECTION:**

This study will be performed for the Duration of 2 years on 40 completely edentulous patients reporting to the Department of Prosthodontics, SPDC, Wardha, 50-70 years of age for complete denture rehabilitation. All patients explained and consented in writing in detail about the participation in the study

### **DETERMINATION OF THE PHYSICAL AND BIOCHEMICAL MARKERS BEFORE COMPLETE DENTURE REHABILITATION**

- Collection of 2ml of blood with 20 gauge needle specifically by venipuncture from antecubital fossa and to be transferred immediately to the laboratory. Till the procedure of assay serum will be separated from blood and stored at -70degree Celsius. The biochemical markers included in the study are Serum Albumin and Serum Prealbumin.
- They will be measured by the standard protocol given in the ELISA kit for serological tests.
- Calculation of Body Mass Index (BMI) as follows ,weight in kilogram divided by Height(meter square)  $-(\text{kg}/\text{m}^2)$  using the digital weighing scale and the height measuring tape.

### **COMPLETE DENTURE FABRICATION AND EVALUATION:**

- To ensure the fabrication and insertion of proper functioning dentures, recording of dental and medical history, examination and planning shall be carried out according to the standard protocol.
- During denture insertion appointment, each patient will be directed regarding the proper use of denture and the post denture insertion instructions and the importance of follow up shall be provided and explained to the patients.
- Satisfaction of the patient and the evaluation of proper Retention, Stability, Support and Occlusion of the complete dentures after Insertion by the dental personnel shall be carried out based upon a predetermined checklist.

### **RECALL AFTER 6 MONTHS**

- The patients will be asked to report for the follow up after 6 months of the Denture Insertion appointment.
- Six months post-insertion of the complete denture prosthesis, interviewing of the subjects to know about the usage of the new dentures usage during meals ,those who could not shall be excluded from the study.

### **DETERMINATION OF THE BIOCHEMICAL AND PHYSICAL MARKERS BEFORE COMPLETE DENTURE REHABILITATION**

- Blood samples (5ml) will be further collected from a peripheral vein with a single puncture. The biochemical markers comprising of Serum Albumin and Serum Prealbumin.
- They will be measured by the standard protocol given in the ELISA kit for serological tests.

- Body Mass Index (BMI) will be calculated as in weight in kilogram divided by Height in meters squared ( $\text{kg}/\text{m}^2$ ) using the digital weighing scale and the height measuring tape.

#### **STATISTICAL ANALYSIS.**

The data thus obtained will be tabulated for further statistical analysis. Data will be analyzed using descriptive and analytical statistical methods. Statistical significance of the mean differences between the measurements in the interval of 6 months will be tested using student paired t-test.

#### **SCOPE:**

- The Prosthodontists who gives some consideration to significance of nutrition can help the elderly patient make the most of his restricted functional resources, will be able to spare elderly patients from numerous ill-effects of nutritive and masticatory deficiencies.
- And can assess changed Body Mass Index, Serum Albumin and Serum Prealbumin levels and recommend procedures to combat them to reduce the risk of malnutrition.
- UNICEF is also working to make good nutrition a reality<sup>4</sup>

#### **V EXPECTED OUTCOME:**

Significant differences in BMI, Serum Albumin and Serum Prealbumin levels are expected before and after 6 months of Complete Denture Rehabilitation.

#### **VI DISCUSSION:**

The observation that loss of tooth and denture wearing, in cooperation affect many Indians as the age advances, also associated with decrease in dietary adequacy and has quite a lot of effects for practicing dentists. The finding from the above study could be effectively employed in office education and training programs to encourage elderly patients to preserve their teeth all over life. Secondly, once loss of tooth and replacement with dentures has occurred, these information indicates that these elderly patients ought to be consulted to dietician helping the patients in monitoring of diet calculatively and to ensure that there is no inadequacy, resulting optimum dental and overall general health. A number of articles concerned to different aspects of this study were accessed from Scopus database of DMIMS and reviewed<sup>5-70</sup>.

#### **VII LIMITATION:**

- The study can be further proceeded with inclusion of other parameters to design a protocol which will cater to the needs accordingly sample size is small.
- A large sample size will give statistically more significant results.

## **REFERENCES:**

- [1] Hiranya Borah, Dr. Praveen Shukla, Kumar SP, Kajal Jain. Elderly in India, Profile and Programming- 2016. Govt India Minist Stat Programme Implement Cent Stat Off. 2016;
- [2] Kanehisa Y, Yoshida M, Taji T, Akagawa Y, Nakamura H. Body weight and serum albumin change after prosthodontic treatment among institutionalized elderly in a long-term care geriatric hospital. *Community Dent Oral Epidemiol.* 2009 Dec;37(6):534–8.
- [3] Shenkin A. Serum prealbumin: Is it a marker of nutritional status or of risk of malnutrition? *Clin Chem.* 2006 Dec;52(12):2177–9.
- [4] Uddin, S., Mahmood, H., Senarath, U. et al. Analysis of stakeholders networks of infant and young child nutrition programmes in Sri Lanka, India, Nepal, Bangladesh and Pakistan. *BMC Public Health* 17, 405 (2017).
- [5] Parlani, S., S. Tripathi, and A. Bhojar. “A Cross-Sectional Study to Explore the Reasons to Visit a Quack for Prosthodontic Solutions.” *Journal of Indian Prosthodontist Society* 18, no. 3 (2018): 231–38. <https://doi.org/10.4103/jips.jips-24-18>.
- [6] Patil, S., R. Ranka, M. Chaudhary, A. Hande, and P. Sharma. “Prevalence of Dental Caries and Gingivitis among Pregnant and Nonpregnant Women.” *Journal of Datta Meghe Institute of Medical Sciences University* 13, no. 1 (2018): 44–47. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_5\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_5_18).
- [7] Rathi, A., R.S. Ransing, K.K. Mishra, and N. Narula. “Quality of Sleep among Medical Students: Relationship with Personality Traits.” *Journal of Clinical and Diagnostic Research* 12, no. 9 (2018): VC01–4. <https://doi.org/10.7860/JCDR/2018/24685.12025>.
- [8] Rathi, N., M. Chandak, and G. Mude. “Comparative Evaluation of Dental Caries in Restored Cavity Prepared by Galvanic and Sintered Burs.” *Contemporary Clinical Dentistry* 9, no. 5 (2018): S23–27. [https://doi.org/10.4103/ccd.ccd\\_801\\_17](https://doi.org/10.4103/ccd.ccd_801_17).
- [9] Rawlani, S.M., R. Bhowate, S. Kashikar, M. Khubchandani, S. Rawlani, and R. Chandak. “Morphological Evaluation of Temporo-Mandibular Joint in Indian Population.” *Brazilian Dental Science* 21, no. 1 (2018): 44–53. <https://doi.org/10.14295/bds.2018.v21i1.1488>.
- [10] Vyas, R., S.R. Suchitra, P.T. Gaikwad, V. Gurumurthy, S. Arora, and S. Shetty. “Assessment of Fracture Resistance Capacity of Different Core Materials with Porcelain Fused to Metal Crown: An in Vitro Study.” *Journal of Contemporary Dental Practice* 19, no. 4 (2018): 389–92. <https://doi.org/10.5005/jp-journals-10024-2271>.
- [11] Baliga, M. “Artificial Intelligence-The next Frontier in Pediatric Dentistry.” *Journal of Indian Society of Pedodontics and Preventive Dentistry* 37, no. 4 (2019): 315. [https://doi.org/10.4103/JISPPD.JISPPD\\_319\\_19](https://doi.org/10.4103/JISPPD.JISPPD_319_19).
- [12] Baliga, S. “It’s Time for Creative Solutions: Collaborations.” *Journal of Indian Society of Pedodontics and Preventive Dentistry* 37, no. 3 (2019): 223. [https://doi.org/10.4103/JISPPD.JISPPD\\_284\\_19](https://doi.org/10.4103/JISPPD.JISPPD_284_19).
- [13] Baliga, S.M. “Child Oral Health-Care Literacy in India: Can Access to Services Be Improved?” *Journal of the Indian Society of Pedodontics and Preventive Dentistry* 37, no. 1 (2019): 1–2. [https://doi.org/10.4103/JISPPD.JISPPD\\_18\\_19](https://doi.org/10.4103/JISPPD.JISPPD_18_19).
- [14] Borle, R.M., A. Jadhav, N. Bholra, P. Hingnikar, and P. Gaikwad. “Borle’s Triangle: A Reliable Anatomical Landmark for Ease of Identification of Facial Nerve Trunk during Parotidectomy.” *Journal of Oral Biology and Craniofacial Research* 9, no. 1 (2019): 33–36. <https://doi.org/10.1016/j.jobcr.2018.08.004>.
- [15] Chaudhary, K.S., and S.V. Phatak. “Choroidal Melanoma in a Young Patient Ultrasonography and Magnetic Resonance Imaging.” *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 2 (2019): 106–8. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_48\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_48_18).
- [16] Chintalwar, R.S., S. Patond, and S. Ninave. “Estimation of Time since Death from Postmortem Lividity.” *Indian Journal of Forensic Medicine and Toxicology* 13, no. 4 (2019): 164–66. <https://doi.org/10.5958/0973-9130.2019.00281.0>.
- [17] Dambhare, A., M.L. Bhongade, P.V. Dhadse, B. Sehdev, K.K. Ganji, K. Thakare, H. Murakami, Y. Sugita, H. Maeda, and M.K. Alam. “A Randomized Controlled Clinical Study of Autologous Platelet Rich Fibrin (PRF) in Combination with HA and Beta-TCP or HA and Beta-TCP Alone for Treatment of Furcation Defects.” *Journal of Hard Tissue Biology* 28, no. 2 (2019): 185–90. <https://doi.org/10.2485/jhtb.28.185>.
- [18] Dangore Khasbage, S., and A.S. Bhake. “Cervical Lymphadenopathy in a Dental Patient: An Eye Opener Case Report.” *Special Care in Dentistry* 39, no. 1 (2019): 59–64. <https://doi.org/10.1111/scd.12336>.

- [19] Dangore Khasbage, S., and A.S. Bhake. "Cervical Lymphadenopathy in a Dental Patient: An Eye Opener Case Report." *Special Care in Dentistry* 39, no. 1 (2019): 59–64. <https://doi.org/10.1111/scd.12336>.
- [20] Deolia, S., J. Johny, M.S. Patil, N.R. Lanje, and A.V. Patil. "Effectiveness of 'Audio-Tactile Performance Technique' to Improve the Oral Hygiene Status of Visually Impaired Schoolchildren." *Journal of Indian Society of Pedodontics and Preventive Dentistry* 37, no. 2 (2019): 172–76. <https://doi.org/10.4103/1319-2442.261344>.
- [21] Gadbail, A.R., M.S. Chaudhary, S.C. Sarode, S.M. Gondivkar, L. Belekar, M.P. Mankar-Gadbail, R. Dande, S.A. Tekade, M.B. Yuwanati, and S. Patil. "Ki67, CD105 and  $\alpha$ -Smooth Muscle Actin Expression in Disease Progression Model of Oral Submucous Fibrosis." *Journal of Investigative and Clinical Dentistry* 10, no. 4 (2019): e12443. <https://doi.org/10.1111/jicd.12443>.
- [22] Gondivkar, S.M., R.R. Bhowate, A.R. Gadbail, R.S. Gondivkar, and S.C. Sarode. "Impact of Socioeconomic Inequalities on Quality of Life in Oral Submucous Fibrosis Patients." *Future Oncology* 15, no. 8 (2019): 875–83. <https://doi.org/10.2217/fo-2018-0645>.
- [23] Gondivkar, S.M., R.R. Bhowate, A.R. Gadbail, R.S. Gondivkar, S.C. Sarode, and G.S. Saode. "Comparison of Generic and Condition-Specific Oral Health-Related Quality of Life Instruments in Patients with Oral Submucous Fibrosis." *Quality of Life Research* 28, no. 8 (2019): 2281–88. <https://doi.org/10.1007/s11136-019-02176-y>.
- [24] Gondivkar, S.M., R.R. Bhowate, A.R. Gadbail, S.C. Sarode, and R.S. Gondivkar. "Assessment of Oral Health-Related Quality of Life Instruments for Oral Submucous Fibrosis: A Systematic Review Using the Consensus-Based Standards for the Selection of Health Measurement Instruments (COSMIN) Checklist." *Oral Oncology* 93 (2019): 39–45. <https://doi.org/10.1016/j.oraloncology.2019.04.009>.
- [25] Gupta, R., M. Chaudhary, S. Patil, C. Fating, A. Hande, and H. Suryawanshi. "Expression of P63 in Tooth Germ, Dentigerous Cyst and Ameloblastoma." *Journal of Oral and Maxillofacial Pathology* 23, no. 1 (2019): 43–48. [https://doi.org/10.4103/jomfp.JOMFP\\_125\\_18](https://doi.org/10.4103/jomfp.JOMFP_125_18).
- [26] Hande, A., M. Chaudhary, M. Gawande, A. Gadbail, P. Zade, S. Bajaj, S. Patil, and S. Tekade. "Oral Submucous Fibrosis: An Enigmatic Morpho-Insight." *Journal of Cancer Research and Therapeutics* 15, no. 3 (2019): 463–69. [https://doi.org/10.4103/jcrt.JCRT\\_522\\_17](https://doi.org/10.4103/jcrt.JCRT_522_17).
- [27] Jagati, A., R. Chaudhary, S. Rathod, B. Madke, K. Baxi, and D. Kasundra. "Preparation of Platelet-Rich Fibrin Membrane over Scaffold of Collagen Sheet, Its Advantages over Compression Method: A Novel and Simple Technique." *Journal of Cutaneous and Aesthetic Surgery* 12, no. 3 (2019): 174–78. <https://doi.org/10.4103/2543-1854.267617>.
- [28] Jain, S., P.T. Deshmukh, P. Lakhotia, S. Kalambe, D. Chandravanshi, and M. Khatri. "Anatomical Study of the Facial Recess with Implications in Round Window Visibility for Cochlear Implantation: Personal Observations and Review of the Literature." *International Archives of Otorhinolaryngology* 23, no. 3 (2019): E281–91. <https://doi.org/10.1055/s-0038-1676100>.
- [29] Jain, S., S. Gaurkar, P.T. Deshmukh, M. Khatri, S. Kalambe, P. Lakhotia, D. Chandravanshi, and A. Disawal. "Applied Anatomy of Round Window and Adjacent Structures of Tympanum Related to Cochlear Implantation." *Brazilian Journal of Otorhinolaryngology* 85, no. 4 (2019): 435–46. <https://doi.org/10.1016/j.bjorl.2018.03.009>.
- [30] Jain, S., P. Singh, D. Methwani, and S. Kalambe. "Role of Eustachian Dysfunction and Primary Sclerotic Mastoid Pneumatization Pattern in Aetiology of Squamous Chronic Otitis Media: A Correlative Study." *Indian Journal of Otolaryngology and Head and Neck Surgery* 71 (2019): 1190–96. <https://doi.org/10.1007/s12070-018-1259-x>.
- [31] Khanam, N., V. Wagh, A.M. Gaidhane, and S.Z. Quazi. "Assessment of Work-Related Musculoskeletal Morbidity, Perceived Causes and Preventive Activities Practiced to Reduce Morbidity among Brick Field Workers." *Indian Journal of Community Health* 31, no. 2 (2019): 213–19.
- [32] "Knowledge, Attitude and Practice on Uses of Plastic Products, Their Disposal and Environmental Pollution: A Study among School-Going Adolescents." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 2 (2019): 57–60. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_27\\_19](https://doi.org/10.4103/jdmimsu.jdmimsu_27_19).
- [33] Kumar, S., S. Jain, A. Wanjari, and S. Mandal. "Development and Validation of a Modified Frailty Risk Index as a Predictor of Mortality in Rural Elderly People." *Asian Journal of Gerontology and Geriatrics* 14, no. 1 (2019): 15–22. <https://doi.org/10.12809/ajgg-2018-315-0a>.
- [34] Laishram, S., V. Gupta, A. Bhake, A. Wankhede, and D. Agrawal. "To Assess the Utility of Proliferative Marker Ki-67 in Surface Epithelial Ovarian Tumor." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 1 (2019): 6–10. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_71\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_71_18).

- [35] Madurwar, K.A., and S.V. Phatak. "Benign Fibrous Histiocytoma of Male Breast: Ultrasonography, Doppler, and Elastography Imaging with Pathological Correlation." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 2 (2019): 103–5. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_44\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_44_18).
- [36] Mahalle, S. "Osteoma of External Auditory Canal Associated with External Auditory Canal Cholesteatoma and Exuberant Granulation Tissue in Mastoid Air Cell System: A Rare Association." *Indian Journal of Otolaryngology and Head and Neck Surgery* 71 (2019): 1505–7. <https://doi.org/10.1007/s12070-019-01643-9>.
- [37] Marfani, G., S.V. Phatak, K.A. Madurwar, and S. Samad. "Role of Sonoelastography in Diagnosing Endometrial Lesions: Our Initial Experience." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 1 (2019): 31–35. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_89\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_89_18).
- [38] Nikahde, P.P., A.N. Kibe, A.P. Thote, R.S. Gawarle, and A.T.T. Ali. "Assessment of Penetration of Low Surface Tension Vehicles in Dentinal Tubules Using Stereomicroscopy." *World Journal of Dentistry* 10, no. 2 (2019): 135–39. <https://doi.org/10.5005/jp-journals-10015-1619>.
- [39] Nimonkar, S., V.M. Belkhode, S. Sathe, and A. Borle. "Prosthetic Rehabilitation for Hemimaxillectomy." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 2 (2019): 99–102. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_40\\_19](https://doi.org/10.4103/jdmimsu.jdmimsu_40_19).
- [40] Nimonkar, S.V., V.M. Belkhode, S.R. Godbole, P.V. Nimonkar, T. Dahane, and S. Sathe. "Comparative Evaluation of the Effect of Chemical Disinfectants and Ultraviolet Disinfection on Dimensional Stability of the Polyvinyl Siloxane Impressions." *Journal of International Society of Preventive and Community Dentistry* 9, no. 2 (2019): 152–58. [https://doi.org/10.4103/jispcd.JISPCD\\_406\\_18](https://doi.org/10.4103/jispcd.JISPCD_406_18).
- [41] Panchbhai, A. "Effect of Oral Submucous Fibrosis on Jaw Dimensions." *Turkish Journal of Orthodontics* 32, no. 2 (2019): 105–9. <https://doi.org/10.5152/TurkJOrthod.2019.18061>.
- [42] Patil, C., A. Jadhav, R. K, N. Bhola, R.M. Borle, and A. Mishra. "Piezosurgery vs Bur in Impacted Mandibular Third Molar Surgery: Evaluation of Postoperative Sequelae." *Journal of Oral Biology and Craniofacial Research* 9, no. 3 (2019): 259–62. <https://doi.org/10.1016/j.jobcr.2019.06.007>.
- [43] Patond, S., P. Mohite, S. Ninave, P. Wankhade, and V. Pande. "Age Related Changes in Accidental Contusion at Tertiary Care Centre." *Indian Journal of Forensic Medicine and Toxicology* 13, no. 4 (2019): 33–36. <https://doi.org/10.5958/0973-9130.2019.00257.3>.
- [44] Phatak, S., D. Shrivastav, G. Marfani, S. Daga, K. Madurwar, and S. Samad. "Transvaginal Sonography and Elastography Evaluation of Ectopic Pregnancy." *Journal of Datta Meghe Institute of Medical Sciences University* 14, no. 2 (2019): 86–89. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_13\\_19](https://doi.org/10.4103/jdmimsu.jdmimsu_13_19).
- [45] Pisulkar, S.K., R. Agrawal, V. Belkhode, S. Nimonkar, A. Borle, and S.R. Godbole. "Perception of Buccal Corridor Space on Smile Aesthetics among Specialty Dentist and Layperson." *Journal of International Society of Preventive and Community Dentistry* 9, no. 5 (2019): 499–504. [https://doi.org/10.4103/jispcd.JISPCD\\_2\\_19](https://doi.org/10.4103/jispcd.JISPCD_2_19).
- [46] Rathi, K., N. Rathi, N. Thosar, and S. Baliga. "Modified Cantilever Bridge; A Novel Approach towards the Replacement of Missing Primary Anterior Teeth." *Indian Journal of Public Health Research and Development* 10, no. 6 (2019): 176–78. <https://doi.org/10.5958/0976-5506.2019.01261.0>.
- [47] Rathi, N.V., A.A. Khatri, A.G. Agrawal, M. Sudhindra Baliga, N.R. Thosar, and S.G. Deolia. "Anesthetic Efficacy of Buccal Infiltration Articaine versus Lidocaine for Extraction of Primary Molar Teeth." *Anesthesia Progress* 66, no. 1 (2019): 3–7. <https://doi.org/10.2344/anpr-65-04-02>.
- [48] Reddy, K.V., A. Jadhav, N. Bhola, A. Mishra, and P. Dakshinkar. "Is 0.75% Ropivacaine More Efficacious than 2% Lignocaine with 1:80,000 Epinephrine for IANB in Surgical Extraction of Impacted Lower Third Molar?" *Oral and Maxillofacial Surgery* 23, no. 2 (2019): 225–31. <https://doi.org/10.1007/s10006-019-00779-w>.
- [49] Regmi, P.R., E. van Teijlingen, P. Mahato, N. Aryal, N. Jadhav, P. Simkhada, Q.S. Zahiruddin, and A. Gaidhane. "The Health of Nepali Migrants in India: A Qualitative Study of Lifestyles and Risks." *International Journal of Environmental Research and Public Health* 16, no. 19 (2019). <https://doi.org/10.3390/ijerph16193655>.
- [50] Sathe, S., S. Karva, A. Borle, M. Dhamande, T. Jaiswal, and S. Nimonkar. "Comparative Evaluation of the Effect of Three Polishing Agents on Staining Characteristics of Provisional Restorative Material: An In Vitro Study." *Journal of International Society of Preventive and Community Dentistry* 9, no. 3 (2019): 250–55. <https://doi.org/10.4103/jispcd.JISPCD-431-18>.
- [51] Sudhindra Baliga, M. "Child's First Dental Visit in India: A Reappraisal." *Journal of Indian Society of Pedodontics and Preventive Dentistry* 37, no. 2 (2019): 113–14. <https://doi.org/10.4103/1319-2442.261335>.

- [52] Baliga, M. "Scientific Appraisal, Evidence, Publication Points... Are Journals the Imperative Answer?" *Journal of Indian Society of Pedodontics and Preventive Dentistry* 35, no. 1 (2017): 1. <https://doi.org/10.4103/0970-4388.199234>.
- [53] Baliga, S. "Obituary." *Journal of the Indian Society of Pedodontics and Preventive Dentistry* 35, no. 3 (2017): 282. [https://doi.org/10.4103/JISPPD.JISPPD\\_217\\_17](https://doi.org/10.4103/JISPPD.JISPPD_217_17).
- [54] "Publication Ethics and Etiquette: The Golden Commandments!" *Journal of Indian Society of Pedodontics and Preventive Dentistry* 35, no. 3 (2017): 187. [https://doi.org/10.4103/JISPPD.JISPPD\\_216\\_17](https://doi.org/10.4103/JISPPD.JISPPD_216_17).
- [55] "Thrust Areas for Pedodontic Research: The Way Ahead!" *Journal of Indian Society of Pedodontics and Preventive Dentistry* 35, no. 4 (2017): 283. [https://doi.org/10.4103/JISPPD.JISPPD\\_1139\\_17](https://doi.org/10.4103/JISPPD.JISPPD_1139_17).
- [56] Baliga, S., M. Chaudhary, S. Bhat, P. Bhatiya, N. Thosar, and P. Bhansali. "Determination of Total Antioxidant Capacity of Saliva in Sickle Cell Anemic Patients - A Cross-Sectional Study." *Journal of Indian Society of Pedodontics and Preventive Dentistry* 35, no. 1 (2017): 14–18. <https://doi.org/10.4103/0970-4388.199219>.
- [57] Basakhetre, U., A. Jaiswal, S. Deolia, S. Sen, M. Dawngliani, and A. Jaiswal. "Prevalence of Tobacco Use among School Children Reporting to Dental Hospital for Treatment." *Journal of Datta Meghe Institute of Medical Sciences University* 12, no. 4 (2017): 242–45. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_28\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_28_18).
- [58] Bhalerao, S.M., V.K. Lohe, R.R. Bhowate, S.C. Mohod, and S. Patel. "Plexiform Unicystic Ameloblastoma: A Rare Variant of Ameloblastoma." *Journal of Datta Meghe Institute of Medical Sciences University* 12, no. 4 (2017): 284–88. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_30\\_18](https://doi.org/10.4103/jdmimsu.jdmimsu_30_18).
- [59] Chandak, L.G., V.K. Lohe, R.R. Bhowate, K.P. Gandhi, and N.V. Vyas. "Correlation of Mandibular Radiomorphometric Indices with Serum Calcium and Serum Estradiol in Pre-and Post-Menopausal Women." *Contemporary Clinical Dentistry* 8, no. 1 (2017): 53–58. <https://doi.org/10.4103/0976-237X.205044>.
- [60] "Correlation of Periodontitis with Mandibular Radiomorphometric Indices, Serum Calcium and Serum Estradiol in Postmenopausal Women: A Case-Control Study." *Indian Journal of Dental Research* 28, no. 4 (2017): 388–94. [https://doi.org/10.4103/ijdr.IJDR\\_532\\_16](https://doi.org/10.4103/ijdr.IJDR_532_16).
- [61] Chandak, M., A. Salgar, P. Nikhade, S. Shrivastava, A. Sahni, and R. Chandak. "Comparative Evaluation of Efficacy and Effectiveness of Profile Rotary Instruments in Conjugation with Solvent for Retreatment of Resilon and Gutta-Percha: An in Vitro Study." *Journal of Datta Meghe Institute of Medical Sciences University* 12, no. 2 (2017): 115–17. [https://doi.org/10.4103/jdmimsu.jdmimsu\\_57\\_17](https://doi.org/10.4103/jdmimsu.jdmimsu_57_17).
- [62] Chhabra, K.G., A. Sharma, C. Chhabra, J.J. Reddy, S.G. Deolia, and Y. Mittal. "Knowledge, Attitude, and Practices Regarding Pharmacovigilance and Adverse Drug Reaction Reporting among Dental Students in a Teaching Hospital, Jodhpur, India: A Cross-Sectional Study." *Journal of Contemporary Dental Practice* 18, no. 10 (2017): 964–69. <https://doi.org/10.5005/jp-journals-10024-2157>.
- [63] Dangore-Khasbage, S. "Clinical Aspects of Oral Cancer: A Case Report Series." *Dental and Medical Problems* 54, no. 1 (2017): 85–89. <https://doi.org/10.17219/dmp/67499>.
- [64] Dhamgaye, T.M., and D.S. Bhaskaran. "An Unusual Pulmonary Metastatic Manifestation of Gestational Choriocarcinoma: A Diagnostic Dilemma." *Lung India* 34, no. 5 (2017): 490–91. [https://doi.org/10.4103/lungindia.lungindia\\_77\\_14](https://doi.org/10.4103/lungindia.lungindia_77_14).
- [65] Dhote, V.S., N.R. Thosar, S.M. Baliga, P. Dharnadhikari, P. Bhatiya, and P. Fulzele. "Surgical Management of Large Radicular Cyst Associated with Mandibular Deciduous Molar Using Platelet-Rich Fibrin Augmentation: A Rare Case Report." *Contemporary Clinical Dentistry* 8, no. 4 (2017): 647–49. [https://doi.org/10.4103/ccd.ccd\\_370\\_17](https://doi.org/10.4103/ccd.ccd_370_17).
- [66] Fande, P.Z., S.K. Patil, A.R. Gadbaile, D.D. Ghatage, A.H. Hande, M.N. Gawande, and M.S. Chaudhary. "Neurovascular Hamartoma of Face: An Unusual Clinical Presentation." *World Journal of Dentistry* 8, no. 2 (2017): 151–54. <https://doi.org/10.5005/jp-journals-10015-1429>.
- [67] Gadbaile, A.R., M. Chaudhary, M. Gawande, A. Hande, S. Sarode, S.A. Tekade, S. Korde, et al. "Oral Squamous Cell Carcinoma in the Background of Oral Submucous Fibrosis Is a Distinct Clinicopathological Entity with Better Prognosis." *Journal of Oral Pathology and Medicine* 46, no. 6 (2017): 448–53. <https://doi.org/10.1111/jop.12553>.
- [68] Gadbaile, A.R., M.S. Chaudhary, S.C. Sarode, M. Gawande, S. Korde, S.A. Tekade, S. Gondivkar, A. Hande, and R. Maladhari. "Ki67, CD105, and  $\alpha$ -SMA Expressions Better Relate the Binary Oral Epithelial Dysplasia Grading System of World Health Organization." *Journal of Oral Pathology and Medicine* 46, no. 10 (2017): 921–27. <https://doi.org/10.1111/jop.12612>.
- [69] Gaikwad, R., R. Bhowate, P. Bajad, A.R. Gadbaile, S. Gondivkar, S.C. Sarode, G.S. Sarode, and S. Patil. "Potential Predictor of Tobacco Cessation among Factory Workers: A Baseline Data of Worksite Tobacco

- Cessation Programs in the Central Part of India.” *Journal of Contemporary Dental Practice* 18, no. 11 (2017): 1071–77. <https://doi.org/10.5005/jp-journals-10024-2178>.
- [70] Ghangurde, A.A., K.K. Ganji, M.L. Bhongade, and B. Sehdev. “Role of Chemically Modified Tetracyclines in the Management of Periodontal Diseases: A Review.” *Drug Research* 67, no. 5 (2017): 258–65. <https://doi.org/10.1055/s-0043-100633>.
- [71] Kumar, G. K., & Prasad, R. S. (2019). A non-linear kernel feature subset selection based semi-supervised framework for medical disease prediction. *International Journal of Advanced Science and Technology*, 28(17), 517-526. Retrieved from [www.scopus.com](http://www.scopus.com)
- [72] Kumar, R., Pruthi, M., & Taneja, G. (2019). Inventory model for deteriorating products with life time and demand depending on price. *International Journal of Advanced Science and Technology*, 27(1), 48-52. Retrieved from [www.scopus.com](http://www.scopus.com)
- [73] Kumar, S., & Bathla, R. K. (2019). Multimodal approach with face and iris to enhance the efficiency of biometric system using soft biometrics. *International Journal of Advanced Science and Technology*, 28(16), 1572-1581. Retrieved from [www.scopus.com](http://www.scopus.com)
- [74] Lakshmi, P., Bharadwaj, A., & Kumar Srivastava, R. (2019). Microbial profile of bacteriuria in pregnant women and their antibiogram. *International Journal of Advanced Science and Technology*, 28(14), 337-344. Retrieved from [www.scopus.com](http://www.scopus.com)
- [75] Lee, S. -, Choi, A. -, Kim, S. -, Won, J. -, & Lee, K. -. (2019). Comparison of EMG activity using spectrum indices from biceps femoris muscle during treadmill walking. *International Journal of Advanced Science and Technology*, 28(3), 33-39. Retrieved from [www.scopus.com](http://www.scopus.com)