

Acceptance of Surgical Periodontal Therapy among Patients Reporting with Periodontal Complaints - A Retrospective Study

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Abstract

The progression of most periodontitis is considered to be slow and periodic in nature with relatively short episodes of rapid tissue destruction followed by prolonged intervening periods of disease remission. This ultimately presents less bothering symptoms to the patients and that eventually reduces the acceptance rate of surgical periodontal therapy. The literature evidence regarding the acceptance rate of patients for surgical periodontal therapy is lacking. Thus this retrospective study was designed with the aim of assessing the acceptance rate of surgical periodontal therapy among patients reporting with periodontal complaints and also to assess the factors that influence their acceptance. The data of patients who were advised for surgical periodontal therapy were retrieved from the university dental hospital patients database using inclusion and exclusion criteria which resulted in 1008 records. From this study population data regarding patients who had accepted and underwent the recommended surgical periodontal therapy was obtained. Other factors like disease extension, gender, periodontal therapy advised were taken into consideration to assess its association with the acceptance rate. The data was imported and analysed using Statistical Package for Social sciences version 16 (SPSS, IBM corporation). The study results showed that only one half (50.9%) of the subjects recommended for surgical periodontal therapy accepted it and underwent the treatment. The acceptance for surgical therapy seems to be influenced by the age, gender, pattern of disease extension. Thus there is a huge lack in awareness and knowledge about the nature and progression of periodontal disease among the general population, that should be addressed by elaborate education, reinforcement and motivation of patients during the initial visits to the general dentist that may lay a foundation for understanding the disease's nature.

Keywords

Periodontitis; Periodontal surgery; Prevalence; Periodontal Therapy.

Introduction:

Periodontitis is an inflammatory disease of the periodontium which is characterized by a progressive destruction of the tissues supporting the tooth.(Listgarten, 1986) Its primary etiology is the plaque biofilm that consists of a complex mixture of microbes that are present as microcolonies in a structured protective matrix. (Listgarten, 1986) Currently the progression of periodontitis is considered to be periodic in nature with relatively short episodes of rapid tissue destruction followed by some repair, and prolonged intervening periods of disease remission.(Burt, 2005) Non-surgical mechanical therapy involving removal of plaque biofilm and calculus from the root surfaces of the tooth mainly focuses on the elimination and reduction of putative periodontal pathogens and shifting the microbial flora to a favourable environment to stabilise periodontal disease.(Barrington, 1981) Even though there is a drastic advancement in periodontal therapies, non surgical therapy is still considered the gold standard for addressing inflammatory periodontal diseases (Heitz-Mayfield and Lang, 2013). Most of the time this along with effective daily plaque control by the patient can reduce periodontal pocket by changing the subgingival ecological environment and favouring resolution of inflammation.(Cortellini and Pini-Prato, 1994) Acceptance of these initial therapies is found to be relatively high, among patients, who are mostly driven by the visible supra gingival deposits on the tooth and bad breath etc.

After phase I (non surgical phase), during reevaluation persistence of pocket with residual deposits demands surgical periodontal therapy like flap surgery, regenerative and resective periodontal therapy etc. Generally in a dental practice the percentage of acceptance of patients for the surgical periodontal therapy seems to be less.(Mendoza, Newcomb and Nixon, 1991) It looks like fear of the surgery plays an important factor for the patient to less likely accept the surgical therapy along with lack of understanding or awareness about the periodontal disease, relative absence of acute symptoms like pain, financial constraint etc. This also involves the role of general dentist as they are the first to encounter the periodontally diseased patients. Unless they have adequate knowledge in diagnosis and periodontal treatment planning, they fail to adequately educate a periodontally compromised patient thus reflecting in the acceptance for surgical periodontal therapy.(Barrington, 1981; Chrysanthakopoulos, 2014) Thus educating about the nature and course of periodontal diseases and developing awareness among patients regarding continual maintenance of oral hygiene is of the utmost importance to promote patients acceptance of surgical periodontal therapy.

The literature evidence regarding the acceptance rate of patients for surgical periodontal therapy is lacking. Previously our team has a rich experience in working on various research projects across multiple disciplines The (Somasundaram *et al.*, 2015; Hafeez and Others, 2016; Krishnan *et al.*, 2018)(Choudhari and Thenmozhi, 2016; Dhinesh *et al.*, 2016; Gurunathan and Shanmugaavel, 2016; Sneha and Others, 2016; GovinDaraju and Gurunathan, 2017; Kumar and Rahman, 2017; Felicita and Sumathi Felicita, 2018; Saravanan *et al.*, 2018; Vijayakumar Jain *et al.*, 2019; Wu *et al.*, 2019; Palati *et al.*, 2020; Paramasivam, Vijayashree Priyadharsini and Raghunandhakumar, 2020)Thus a retrospective study was designed with the aim of assessing the acceptance rate of surgical periodontal therapy among patients reporting with periodontal complaints and also to assess the factors that influence their acceptance.

Materials and methods:

This is a retrospective clinical study that is designed to evaluate the acceptance rate of surgical periodontal therapy among patients reporting with periodontal complaints. The study population consists of a predominantly South Indian population. After obtaining approval from the institutional ethical review board (SDS/SIHEC/2020/DIASDATA/0619-032020) , the list of all patients advised for surgical periodontal therapy who reported with periodontal complaints were retrieved by reviewing 86000 patient records who have visited the university dental hospital during the study period from the university database, based on the following criteria .

Inclusion criteria :

- Patients with age of 18-68
- Patients with Periodontitis who were advised for surgical pocket therapy (Flap surgery) between the June 2019 and March 2020
- Records with complete data and photographs during treatment .

Exclusion criteria :

- Patients with systemic diseases
- Records with incomplete data of clinical examination and treatment planning.

The search resulted in 1008 patients who were diagnosed with periodontitis and were advised for surgical periodontal therapy. From this study population data regarding patients who had accepted and underwent the recommended surgical

periodontal therapy was obtained. The age range of the patients included in this study was 18-69 years of age and were categorised into three age groups ; young adults (18-29 years), middle aged (30-49 years) and older adults (50-69 years). Other factors like disease extent, gender, periodontal therapy advised were taken into consideration to assess its association with the acceptance rate. The data was imported and analysed using Statistical Package for Social sciences version 16(SPSS,IBM corporation). Descriptive analysis was based on quantitative variables and frequencies for categorical variables. P less than or equal to 0.05 was considered statistically significant with a confidence interval of 95% .The results were then arranged and presented descriptively .

Results and Discussion :

Our study results showed that among 1008 patients who were advised for flap surgery, only 513 (50.9%) underwent flap surgery and 49.1% chose not to undergo the treatment .No literature evidence could be found to directly compare our findings. However the less acceptance rate among patients could be justified as, when compared to dental caries, periodontitis is less likely to present symptoms that bother the patients like unaesthetic appearance, pain etc, at the initial stages thus not driving the patient to get it treated.(Horwitz and Horwitz, 1993)

Further, among patients who underwent surgical periodontal therapy, male patients showed a higher rate of acceptance (graph 3)($p < 0.005$), compared to females.This trend seen in our study population could be due to an increased level of fear or anxiety as the treatment is a surgical procedure and involves administration of local anesthesia, female patients often tend to postpone the treatment till severe symptoms occur due to lack of time and other impending social responsibilities. Also as prevalence of periodontitis was significantly higher in males and increased with increasing age groups, as reported by a national survey in India(Bali *et al.*, 2004) , male patients showed a higher rate of acceptance.But deviating from that trend , Krustup and Petersen(Krustup and Erik Petersen, 2006) did a cross-sectional study on a random sample of 1,115 Danish adults aged 35-44 years and 65-74 years,who underwent periodontal surgery. There was no difference in prevalence between males and females.Different socioeconomic status , difference in diet and awareness about hygiene practises can be a reason for this change in trend .(Shekar, Reddy and Manjunath, 2011)

Our observations also showed that more middle aged (30 to 49 years age) patients tend to accept periodontal surgery (25.6%), compared to other age groups (graph3).Middle age patients tend to have a healthier diet , awareness about oral hygiene and would indulge in routine dental check due their affordable socioeconomic and financial status and their levels of anxiety may be low.(Guzeldemir, Toygar and Cilasun, 2008) In contrast elderly patients who are financially and mentally dependable and being mostly affected with some other chronic systemic disease tend to least bother about oral & periodontal problems.

Among the patients who accepted the recommended surgical periodontal therapy 38.3% of the patients were diagnosed with generalized chronic periodontitis and 12.5% of the patients were diagnosed with localised chronic periodontitis .An alarming 34.7% and 14.3% of the patient with generalised and localised chronic periodontitis respectively did not accept the recommended periodontal surgical therapy (graph 4). Thus it can be inferred that patients with generalised disease patterns tend to accept the surgical periodontal therapy more than patients with localised disease patterns.(Chabanski *et al.*, 1996) This may be, because the most of periodontal disease is chronic and slowly progressing in nature which patients do not perceive as particularly threatening especially at an early stage and localised disease presentation. (Wilson, 1996). However when the disease becomes advanced and generalised, it presents with symptoms that may really bother the patient like mobility, spacing, pain, fear of losing the teeth etc that may drive the patient to accept the recommended surgical therapy.(Jönsson *et al.*, 2006) Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

The limitations of our study are the retrospective study design and influence of factors like socioeconomic status, educational levels on acceptance were not addressed. Thus future studies with prospective study design and more standardisation should be planned to further confirm our study results.

Conclusion :

Within the limits of the study it can be concluded that only one half (50.9%) of the subjects recommended for surgical periodontal therapy accepted it and underwent the treatment. The acceptance for surgical therapy seems to be influenced by the age, gender, pattern of disease extension. Thus there is a huge lack in awareness and knowledge about the nature and progression of periodontal disease among the general population, that should be addressed by during the initial visits to the general dentist that may lay a foundation for understanding the disease's nature.

Acknowledgment

Acceptance of Surgical Periodontal Therapy among Patients Reporting with Periodontal Complaints - A Retrospective Study

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Authors Contribution

Author 1 (Amina Mehrin Bano) carried out the retrospective study by collecting data and drafting the manuscript after performing the necessary statistical analysis . Author 2(Dr. Thamarai Selvan) aided in conception of the topic , has participated in the study design , statistical analysis and has supervised in preparation of the manuscript .Author 3 (Dr. srirengalakshmi)has supervised in preparation of the manuscript All authors discussed the results and contributed to the final manuscript.

Conflict Of Interest

The researcher claims no conflict of interest.

Reference :

- Bali, R. K. *et al.* (2004) 'National oral health survey and fluoride mapping 2002-2003 India', *New Delhi: Dental Council of India*, 132.
- Barrington, E. P. (1981) 'An overview of periodontal surgical procedures', *Journal of periodontology*, 52(9), pp. 518–528.
- Burt, B. (2005) 'Academy report. Position Paper', *Epidemiology of periodontal diseases. J Periodontol*, 76, pp. 1406–1419.
- Chabanski, M. B. *et al.* (1996) 'Prevalence of cervical dentine sensitivity in a population of patients referred to a specialist Periodontology Department', *Journal of clinical periodontology*, 23(11), pp. 989–992.
- Chandrasekar, R. *et al.* (2020) 'Development and validation of a formula for objective assessment of cervical vertebral bone age', *Progress in orthodontics*, 21(1), p. 38.
- Choudhari, S. and Thenmozhi, M. S. (2016) 'Occurrence and Importance of Posterior Condylar Foramen', *Laterality*, 8, pp. 11–43.
- Chrysanthakopoulos, N. A. (2014) 'Gingival recession: prevalence and risk indicators among young greek adults', *Journal of clinical and experimental dentistry*, 6(3), pp. e243–9.
- Cortellini, P. and Pini-Prato, G. (1994) 'Periodontal regeneration of infrabony defects (V). Effect of oral hygiene on long-term stability', *Journal of Clinical*. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1600-051X.1994.tb00751.x>.
- Dhinesh, B. *et al.* (2016) 'An assessment on performance, emission and combustion characteristics of single cylinder diesel engine powered by Cymbopogon flexuosus biofuel', *Energy Conversion & Management*, 117, pp. 466–474.
- Ezhilarasan, D., Apoorva, V. S. and Ashok Vardhan, N. (2019) 'Syzygium cumini extract induced reactive oxygen species-mediated apoptosis in human oral squamous carcinoma cells', *Journal of oral pathology & medicine: official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology*, 48(2), pp. 115–121.
- Felicita, A. S. and Sumathi Felicita, A. (2018) 'Orthodontic extrusion of Ellis Class VIII fracture of maxillary lateral incisor – The sling shot method', *The Saudi Dental Journal*, pp. 265–269. doi: 10.1016/j.sdentj.2018.05.001.
- GovinDaraju, L. and Gurunathan, D. (2017) 'Effectiveness of Chewable Tooth Brush in Children-A Prospective Clinical Study', *Journal of clinical and diagnostic research: JCDR*, 11(3), p. ZC31.
- Gurunathan, D. and Shanmugaavel, A. K. (2016) 'Dental neglect among children in Chennai', *Journal of the Indian Society of Pedodontics and Preventive Dentistry*, 34(4), p. 364.
- Guzeldemir, E., Toygar, H. U. and Cilasun, U. (2008) 'Pain perception and anxiety during scaling in periodontally

healthy subjects', *Journal of periodontology*, 79(12), pp. 2247–2255.

Hafeez, N. and Others (2016) 'Accessory foramen in the middle cranial fossa', *Research Journal of Pharmacy and Technology*, 9(11), p. 1880.

Heitz-Mayfield, L. J. A. and Lang, N. P. (2013) 'Surgical and nonsurgical periodontal therapy. Learned and unlearned concepts', *Periodontology 2000*. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/prd.12008>.

Horwitz, R. I. and Horwitz, S. M. (1993) 'Adherence to treatment and health outcomes', *Archives of internal medicine*, 153(16), pp. 1863–1868.

Jönsson, B. *et al.* (2006) 'Improved compliance and self-care in patients with periodontitis--a randomized control trial', *International journal of dental hygiene*, 4(2), pp. 77–83.

Krishnan, R. P. *et al.* (2018) 'Surgical Specimen Handover from Operation Theater to Laboratory: A Survey', *Annals of maxillofacial surgery*, 8(2), pp. 234–238.

Krustrup, U. and Erik Petersen, P. (2006) 'Periodontal conditions in 35–44 and 65–74-year-old adults in Denmark', *Acta odontologica Scandinavica*, 64(2), pp. 65–73.

Kumar, S. and Rahman, R. (2017) 'Knowledge, awareness, and practices regarding biomedical waste management among undergraduate dental students', *Asian journal of pharmaceutical and clinical research*, 10(8), p. 341.

Listgarten, M. A. (1986) 'Pathogenesis of periodontitis', *Journal of clinical periodontology*, 13(5), pp. 418–430.

Mathew, M. G. *et al.* (2020) 'Evaluation of adhesion of Streptococcus mutans, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: Randomized controlled trial', *Clinical oral investigations*, pp. 1–6.

Mendoza, A. R., Newcomb, G. M. and Nixon, K. C. (1991) 'Compliance with supportive periodontal therapy', *Journal of periodontology*, 62(12), pp. 731–736.

Palati, S. *et al.* (2020) 'Knowledge, Attitude and practice survey on the perspective of oral lesions and dental health in geriatric patients residing in old age homes', *Indian Journal of Dental Research*, p. 22. doi: 10.4103/ijdr.ijdr_195_18.

Paramasivam, A., Vijayashree Priyadharsini, J. and Raghunandhakumar, S. (2020) 'N6-adenosine methylation (m6A): a promising new molecular target in hypertension and cardiovascular diseases', *Hypertension research: official journal of the Japanese Society of Hypertension*, 43(2), pp. 153–154.

Pc, J., Marimuthu, T. and Devadoss, P. (2018) 'Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study', *Clinical implant dentistry and related research*. Available at: <https://europepmc.org/article/med/29624863>.

Ramadurai, N. *et al.* (2019) 'Effectiveness of 2% Articaine as an anesthetic agent in children: randomized controlled trial', *Clinical oral investigations*, 23(9), pp. 3543–3550.

Ramesh, A. *et al.* (2018) 'Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study', *Journal of periodontology*, 89(10), pp. 1241–1248.

R, H. *et al.* (2020) 'CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene', *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, pp. 306–312. doi: 10.1016/j.oooo.2020.06.021.

Samuel, S. R. (2021) 'Can 5-year-olds sensibly self-report the impact of developmental enamel defects on their quality of life?', *International journal of paediatric dentistry / the British Paedodontic Society [and] the International Association of Dentistry for Children*, 31(2), pp. 285–286.

Saravanan, M. *et al.* (2018) 'Synthesis of silver nanoparticles from Phenerochaete chryso sporium (MTCC-787) and their antibacterial activity against human pathogenic bacteria', *Microbial pathogenesis*, 117, pp. 68–72.

Shekar, B. R. C., Reddy, C. V. K. and Manjunath, B. C. (2011) 'Dental health awareness, attitude, oral health-related habits, and behaviors in relation to socio-economic factors among the municipal employees of Mysore ...', *Annals of Tropical*. Available at: <http://www.jhrsonline.org/article.asp?issn=1755->

Acceptance of Surgical Periodontal Therapy among Patients Reporting with Periodontal Complaints - A Retrospective Study

6783;year=2011;volume=4;issue=2;spage=99;epage=106;aualast=Chandra.

Sneha, S. and Others (2016) 'Knowledge and awareness regarding antibiotic prophylaxis for infective endocarditis among undergraduate dental students', *Asian Journal of Pharmaceutical and Clinical Research*, pp. 154–159.

Somasundaram, S. *et al.* (2015) 'Fluoride content of bottled drinking water in Chennai, Tamilnadu', *Journal of clinical and diagnostic research: JCDR*, 9(10), p. ZC32.

Sridharan, G. *et al.* (2019) 'Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma', *Journal of oral pathology & medicine: official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology*, 48(4), pp. 299–306.

Vijayakumar Jain, S. *et al.* (2019) 'Evaluation of Three-Dimensional Changes in Pharyngeal Airway Following Isolated Lefort One Osteotomy for the Correction of Vertical Maxillary Excess: A Prospective Study', *Journal of maxillofacial and oral surgery*, 18(1), pp. 139–146.

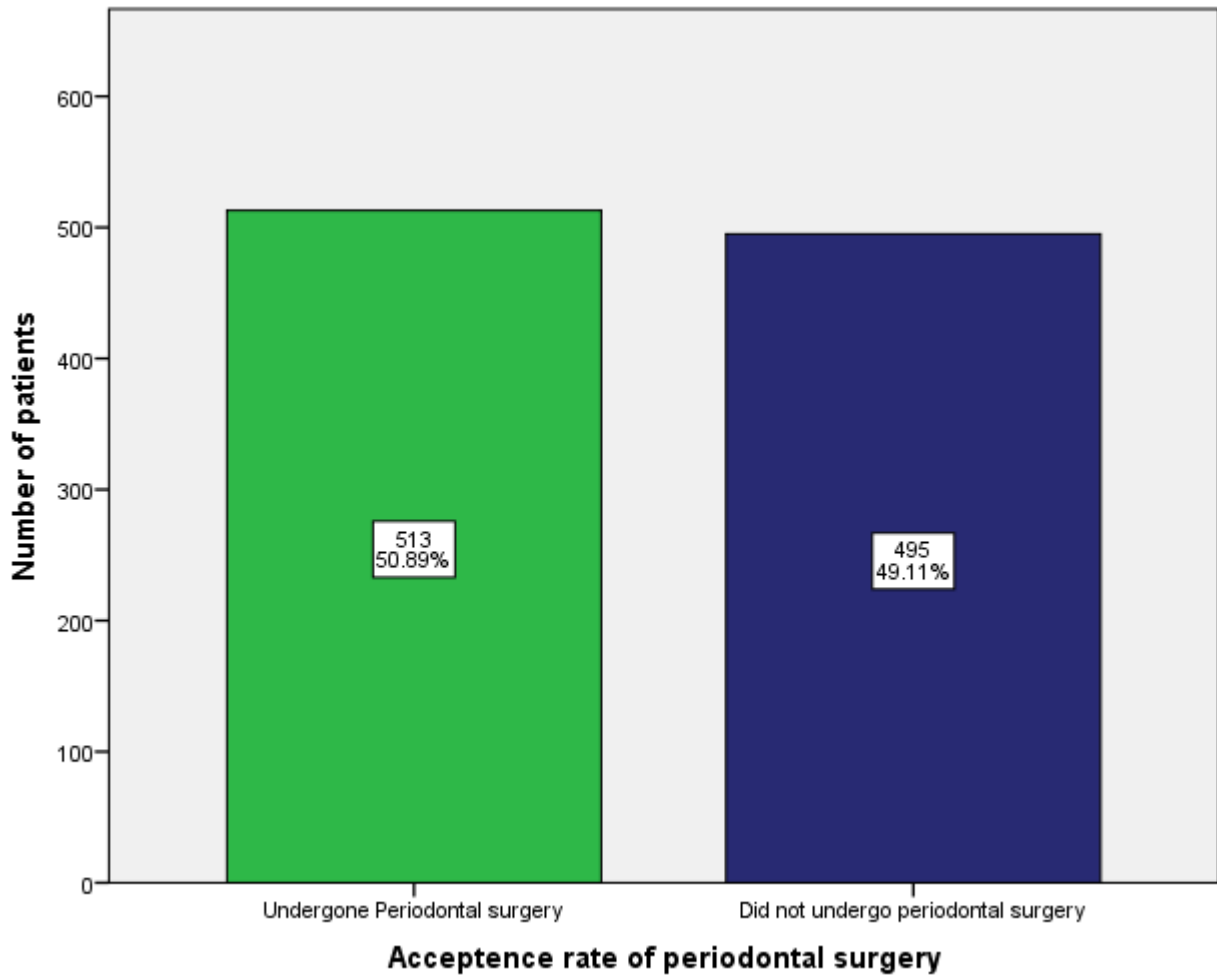
Vijayashree Priyadharsini, J. (2019) 'In silico validation of the non-antibiotic drugs acetaminophen and ibuprofen as antibacterial agents against red complex pathogens', *Journal of periodontology*, 90(12), pp. 1441–1448.

Vijayashree Priyadharsini, J., Smiline Girija, A. S. and Paramasivam, A. (2018) 'In silico analysis of virulence genes in an emerging dental pathogen *A. baumannii* and related species', *Archives of oral biology*, 94, pp. 93–98.

Wilson, T. G., Jr (1996) 'Compliance and its role in periodontal therapy', *Periodontology 2000*, 12, pp. 16–23.

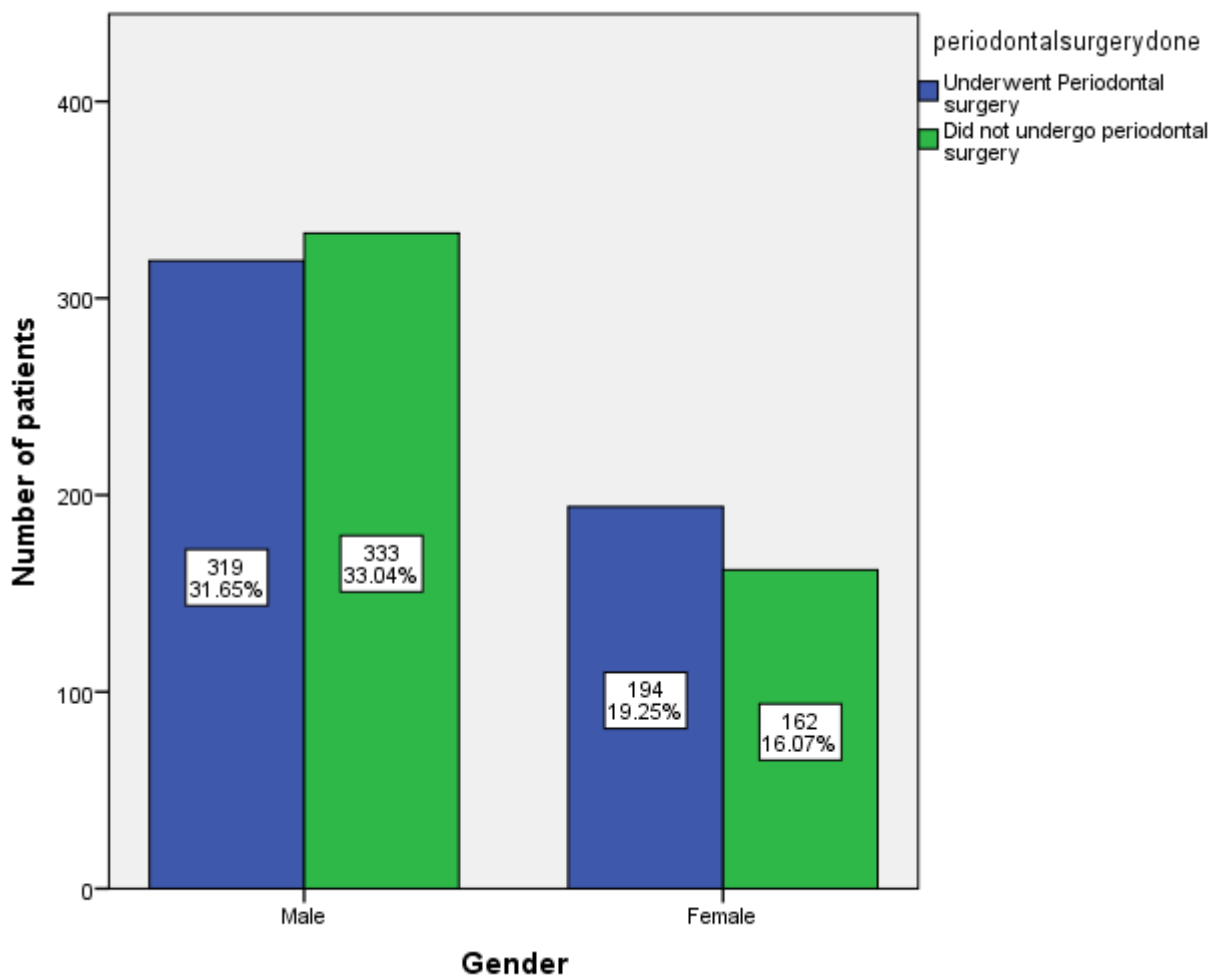
Wu, F. *et al.* (2019) 'Biologically synthesized green gold nanoparticles from Siberian ginseng induce growth-inhibitory effect on melanoma cells (B16)', *Artificial cells, nanomedicine, and biotechnology*, 47(1), pp. 3297–3305.

Graphs :

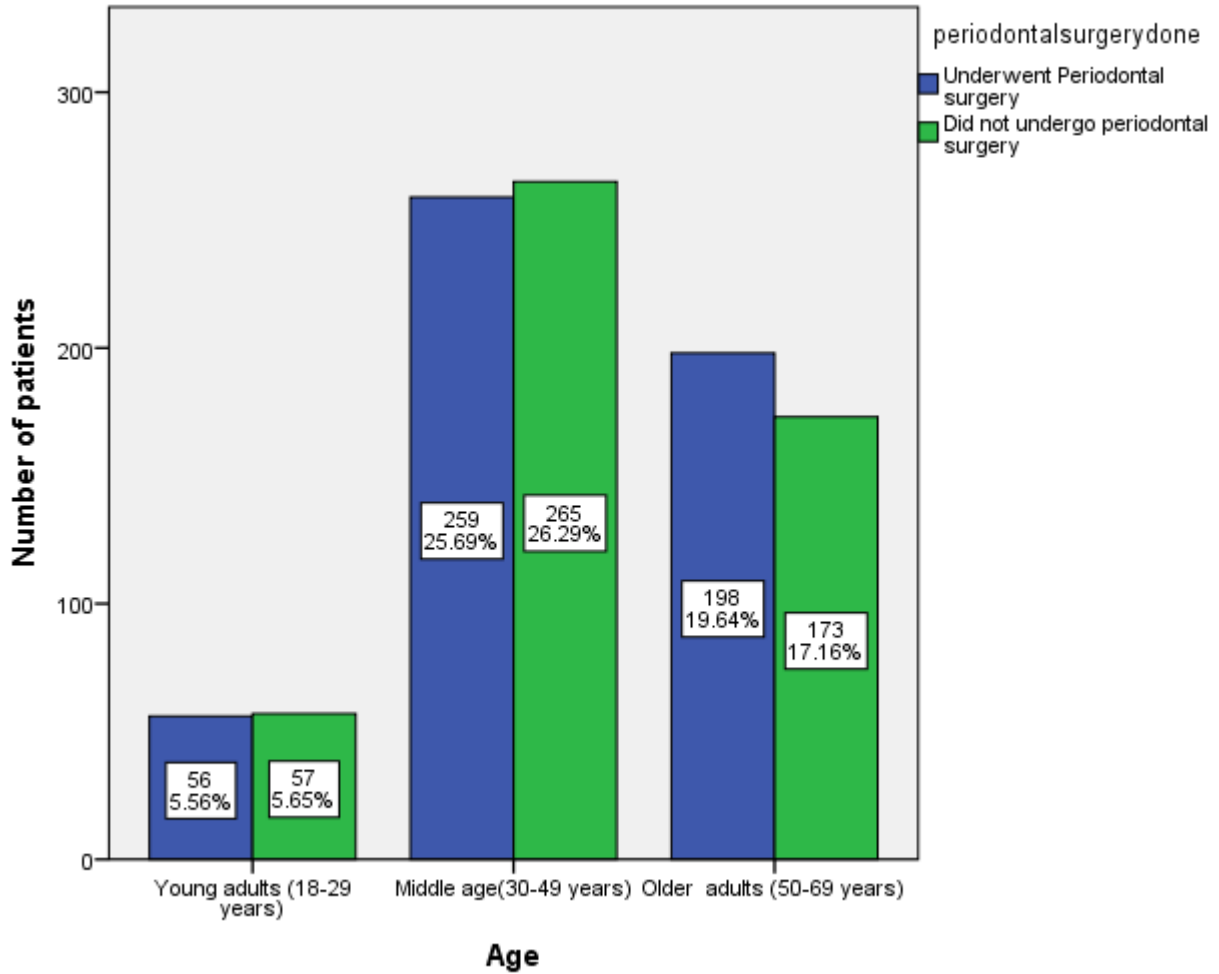


Graph 1 : Graph representing the rate of acceptance of periodontal surgery among patients. X - axis represents acceptance rate of periodontal surgery and Y-axis represents number of patients .From 1008 patients of the total study population who were advised periodontal surgery only 513 (50.9%) had undergone(green) the recommended treatment whereas 49.11% did not undergo(blue) the treatment .

Acceptance of Surgical Periodontal Therapy among Patients Reporting with Periodontal Complaints - A Retrospective Study

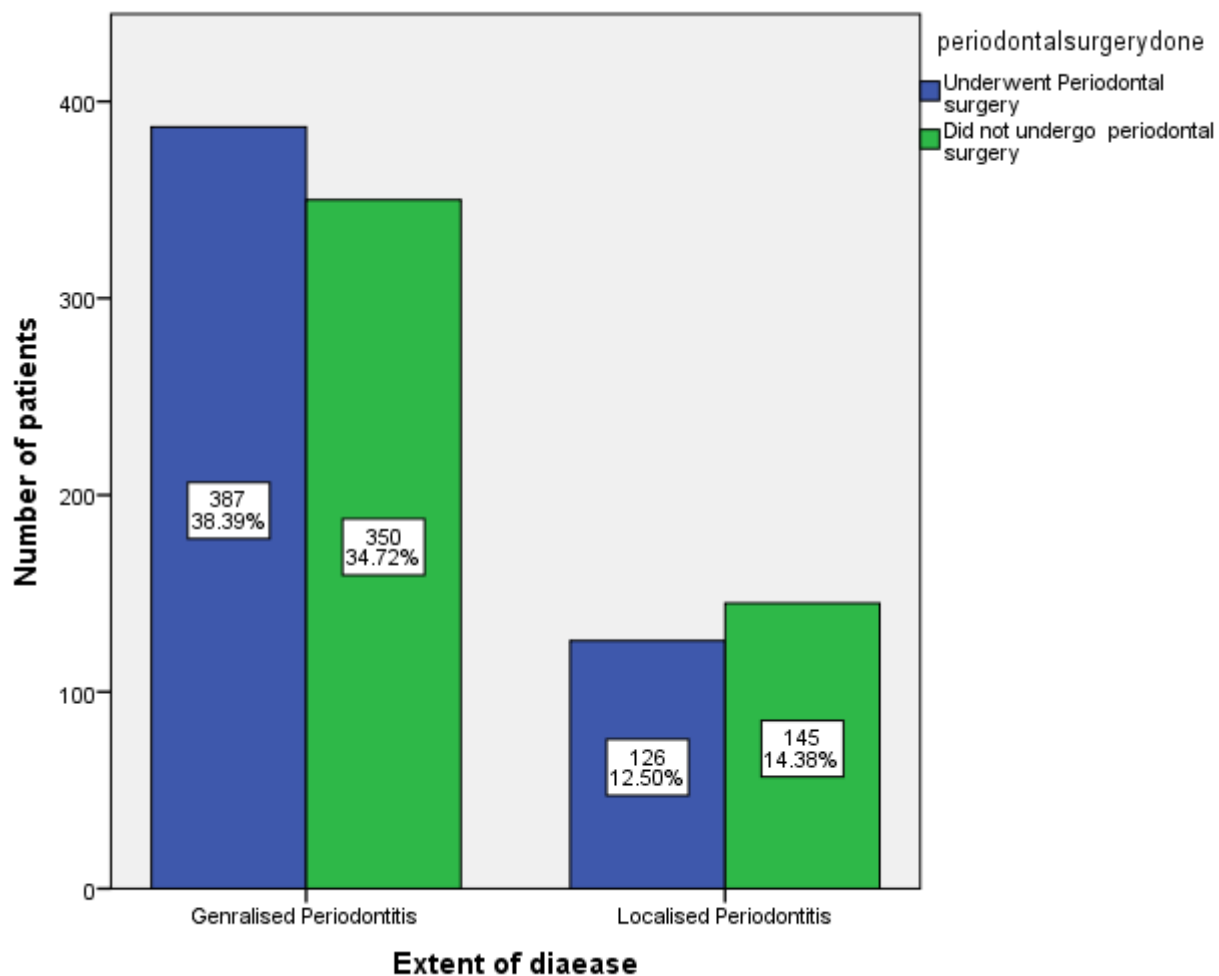


Graph 2: Graph showing association of gender with acceptance rate for periodontal flap surgery. X-axis represents the gender and Y- axis represents the number of patients. The association shows the acceptance rate is more in males (blue) compared to females (blue) for surgical periodontal therapy. Chi square test was done (Pearson's chi square value =0.003 , df=1, p value =0.003(<0.05)) which showed association was found to be statistically significant proving that gender influences the acceptance rate of surgical periodontal surgery.



Graph 3: Graph depicts the association between acceptance rate of periodontal surgery and the different age groups. X-axis represents the different age groups and Y-axis represents the number of patients. The middle aged (30 to 49 years) patients showed higher acceptance rate for periodontal surgery (blue) compared to other age groups. Chi square test (Pearson's chi square value =0.014 , df=2, p value =0.014(<0.05)) showed the association to be statistically significant hence proving that age has an influence on the acceptance for periodontal surgery.

Acceptance of Surgical Periodontal Therapy among Patients Reporting with Periodontal Complaints - A Retrospective Study



Graph 4: The graph depicts the association between extent of disease and the acceptance rate for periodontal surgery. The X-axis represents the extent of disease and Y axis represents the number of patients. Patients with generalised disease pattern (blue) accepted more for the surgical periodontal therapy when compared to patients with localised disease pattern. Chi square test (Pearson's chi square value =0.038 , df=2, p value =0.014(<0.05)) showed a statistically significant association, hence proving that extent of the disease has an influence on the acceptance rate for periodontal surgery .