



Knowledge and Awareness about the Periodontal Flap Surgery among Undergraduate Dental Students

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Date of Submission: 20-01-2025

Date of Acceptance: 30-01-2025

ABSTRACT: Periodontal diseases significantly impact oral health, often requiring advanced surgical interventions like periodontal flap surgery. This study aims to evaluate the knowledge and awareness of periodontal flap surgery among undergraduate dental students, identifying gaps in their education and training. A cross-sectional survey of 166 students was conducted using a structured questionnaire covering various aspects of flap surgery, including its purpose, indications, techniques, complications, and post-operative care. Data analysis using descriptive statistics and chi-square tests revealed that while most students understood fundamental concepts such as the purpose of flap surgery and common indications, knowledge gaps persisted in advanced techniques, material use, and post-surgical healing processes. Statistically significant differences were observed in key areas of understanding.

The findings highlight the importance of enhancing the dental curriculum with a focus on practical exposure and advanced theoretical training to ensure students are well-prepared for clinical roles. Strengthening periodontal education will contribute to improved clinical outcomes and better preparation of future dental professionals.

KEYWORDS:

I. INTRODUCTION

Periodontal diseases, which affect the supporting structures of teeth, are a critical concern in oral health care. Effective management of advanced periodontal conditions often requires surgical interventions such as periodontal flap surgery. This widely used therapeutic procedure allows access to the underlying structures of the periodontium, facilitating treatment and promoting

better oral health outcomes⁽¹⁾⁽²⁾⁽³⁾. As part of the undergraduate dental curriculum, students are introduced to various aspects of periodontal therapy, including flap surgery. This exposure is designed to prepare them with the knowledge and skills necessary for clinical practice⁽⁴⁾⁽⁵⁾. However, the extent of their awareness and understanding of periodontal flap surgery may vary, depending on factors such as their academic level, exposure to theoretical knowledge, and clinical training⁽⁶⁾. This study aims to assess the awareness and knowledge of periodontal flap surgery among undergraduate dental students. By evaluating their current understanding, the research seeks to identify educational gaps and highlight areas within the curriculum that may require additional emphasis. The findings have the potential to enhance periodontal education and training, ultimately leading to improved preparation of future dental professionals and better clinical outcomes for patients undergoing periodontal treatments⁽⁷⁾⁽⁸⁾⁽⁹⁾. In order to accomplish this, structured questionnaire will be employed to obtain data on key aspects, including the theoretical foundation of the procedure, its indications, techniques, complications, and post-operative care. This comprehensive assessment will provide valuable insights into the readiness of undergraduate dental students to perform periodontal flap surgeries in their future professional roles⁽¹⁰⁾⁽¹¹⁾⁽¹²⁾.

II. MATERIAL AND METHOD:

The study adopted a cross-sectional design, with questionnaires circulated to undergraduate students via an online survey link. The questionnaire contained 15 questions. Ethical



approval was obtained from the College's scientific research committee, and detailed information about the study's purpose and methodology was provided. A total of 166 students, both undergraduate participated in the survey. Responses were first compiled in Excel and then imported into IBM SPSS software for analysis. Descriptive statistics were evaluated, and the chi-square test was used to assess the data and determine statistical significance at the 0.05 level. The results were presented in tables showing both frequency distributions and statistical significance.

III. RESULTS AND DISCUSSION:

Descriptive statistics were presented using frequency and percentage for qualitative data. The chi-square test was used to evaluate the differences in knowledge. Data analysis was conducted using SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp., Released 2019). A significance level of 5% ($\alpha = 0.05$) was set, and a p-value of <0.05 was considered statistically significant.

TABLE 1: DEMOGRAPHIC DETAILS

AGE	Frequency (N)	Percentage (%)
Below 25 years	160	96.4
Above 25 years	6	3.6
YEAR OF STUDY	Frequency (N)	Percentage (%)
3 rd year	40	24.1
Final year	62	37.3
Interns	64	38.6

In our study of 166 dental undergraduate students, 160 were under the age of 25, while

6 were over 25. Among these students, 64 were interns, 62 were in their final year, and 40 were in their third year.

TABLE 2: QUESTIONNAIRE RECORDED AMONG THE STUDY PARTICIPANTS

QUESTIONNAIRE	OPTIONS	Frequency (N)	Percentage (%)
What is the primary purpose of flap surgery in periodontics	Cosmetic improvement	22	13.3
	Removal of dental caries	8	4.8
	Access for thorough debridement and periodontal regeneration	132	79.5
	Orthodontic alignment	4	2.4
Which of the following is a common	Healthy gingiva	12	7.2
	Shallow	28	16.9



indication for periodontal flap surgery?	periodontal pockets		
	Periodontal pockets ≥ 5 mm with bone loss	124	74.7
	Completely edentulous patients	2	1.2
What is a full-thickness flap in periodontal surgery?	A flap that includes only the epithelium	16	9.6
	A flap that includes the epithelium, connective tissue, and periosteum	122	73.5
	A flap that includes only the connective tissue	25	15.1
	A flap that involves removal of the gingiva	3	1.8
During flap surgery, which material is	Amalgam	9	5.4
	Guided tissue regeneration	144	86.7

commonly used to promote bone regeneration?	n membranes		
	Temporary crown materials	9	5.4
	Acrylic resin	4	2.4
Which condition is a contraindication for flap surgery?	Uncontrolled diabetes(105	63.3
	Severe bone loss	38	22.9
	Periodontal pockets with plaque and calculus	15	9.0
	Gingival recession	8	4.8
What is the main advantage of Modified Widman Flap surgery?	Minimal tissue trauma	58	34.9
	Complete removal of the gingiva	23	13.9
	Primarily for aesthetic enhancement	79	47.6
	Treating gingival	6	3.6



	hyperplasia		
Which structure is preserved during partial-thickness flap surgery	Connective tissue	35	21.1
	Periosteum	83	50.0
	Alveolar bone	10	6.0
	All of the above	38	22.9
what type of healing is typically expected after flap surgery?	Primary intention healing	60	36.1
	Secondary intention healing	86	51.8
	Delayed healing	13	7.8
	Spontaneous healing without sutures	7	4.2
What is the typical duration of initial healing after flap surgery	1-2 days	34	20.5
	7-10 days	103	62.0
	3-4 weeks	22	13.3
	6 months	7	4.2
Which of the following instruments is commonly used to	Periodontal probe	39	23.5
	Curette	43	25.9
	Periosteal	81	48.8

reflect the flap in periodontal surgery?	elevator(
	Scaler	3	1.8
What is the main role of barrier membranes in flap surgery?	To reduce bacterial growth	65	39.2
	To guide tissue regeneration by preventing soft tissue from invading the bone defect	86	51.8
	To serve as a scaffold for tissue regeneration	10	6.0
	To seal periodontal pockets	5	3.0
	To reduce inflammation	63	38.0
What is the main purpose of bone grafting in conjunction with flap surgery	To restore lost bone and promote regeneration	90	54.2



	To	7	4.2
	increase tooth stability		
	To enhance gum aesthetics	6	3.6

TABLE 3: COMPARISON OF CORRECT AND INCORRECT ANSWER AMONG THE STUDY PARTICIPANTS

QUESTIONNAIRE	OPTIONS	Frequency (N)	Percentage (%)	P-value
What is the primary purpose of flap surgery in periodontics	Correct answer	132	79.5	0.021*
	Incorrect answer	34	20.5	
Which of the following is a	Correct answer	124	74.7	0.026*
	Incorrect answer	42	25.3	

common indication for periodontal flap surgery?				
What is a full-thickness flap in periodontal surgery?	Correct answer	122	73.5	0.023*
	Incorrect answer	44	26.5	
During flap surgery, which material is commonly used to promote bone regeneration?	Correct answer	9	5.4	0.001*
	Incorrect answer	156	94.6	
Which condition is a contraindication for flap surgery	Correct answer	105	63.3	0.046*
	Incorrect answer	61	36.7	
What is	Correct	58	34.9	0.04



the main advantage of Modified Widman Flap surgery?	answer			3*
	Incorrect answer	108	65.1	
Which structure is preserved during partial-thickness flap surgery?	Correct answer	83	50.0	1.00
	Incorrect answer	83	50.0	
what type of healing is typically expected after flap surgery?	Correct answer	60	36.1	0.048*
	Incorrect answer	106	63.9	
What is the typical duration of initial healing after flap surgery?	Correct answer	103	62.0	0.051
	Incorrect answer	63	38.0	
Which of the following	Correct answer	81	48.8	0.34
	Incorrect answer	85	51.2	

instruments is commonly used to reflect the flap in periodontal surgery?	answer			
What is the main role of barrier membranes in flap surgery?	Correct answer	86	51.8	0.061
	Incorrect answer	80	48.2	
What is the main purpose of bone grafting in conjunction with flap surgery?	Correct answer	90	54.2	0.94
	Incorrect answer	76	45.8	

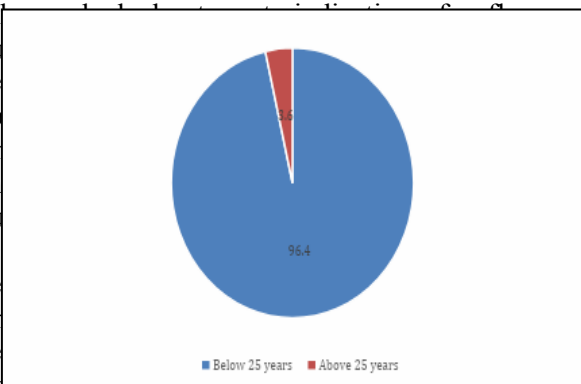


Table 3. represents the responses of undergraduate dental students regarding the primary purpose of flap surgery in periodontics. A chi-square test was performed, showing a statistically significant relationship (p-value = 0.021). This indicates a significant statistical relationship. Chi-square test was performed on the responses provided by undergraduate dental students regarding common indications for periodontal flap surgery. The results revealed a statistically significant relationship (p-value = 0.026). The responses provided by undergraduate dental students when asked about a full-thickness flap in periodontal surgery, assessed using the chi-square test. The results demonstrated a statistically significant relationship (p-value = 0.023). The responses provided by undergraduate dental students regarding the material commonly used to promote bone regeneration during flap surgery were assessed. A Chi-square test was carried out, and a statistically significant relationship was found (p-value = 0.001), indicating a meaningful relationship. The responses provided by undergraduate dental students

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partial-thickness flap surgery were assessed by applying a chi-square test. The findings showed no statistically significant association,

with a p-value of 1, indicating the absence of a statistical relationship. The responses provided by undergraduate dental students regarding the type of healing typically expected after flap surgery were analyzed using a Chi-square test. The results showed a statistically significant relationship (p-value = 0.048). The responses provided by undergraduate dental students regarding the typical duration of initial healing after flap surgery were analyzed applying a Chi-square test. The findings showed no statistically significant relationship (p-value = 0.051). The responses from undergraduate dental students regarding the instrument commonly used to reflect the flap in periodontal surgery assessed by applying a Chi-square test. The findings showed no statistically significant relationship (p-value = 0.34). The responses provided by undergraduate dental students regarding the main role of barrier membranes in flap surgery assessed by applying a Chi-square test. The findings showed no statistically significant relationship (p-value = 0.061). The responses given by undergraduate dental students regarding the main purpose of bone grafting in conjunction with flap surgery assessed by applying a Chi-square test. The findings revealed no statistically significant relationship (p-value = 0.094).

GRAPH 1: AGE DISTRIBUTION:





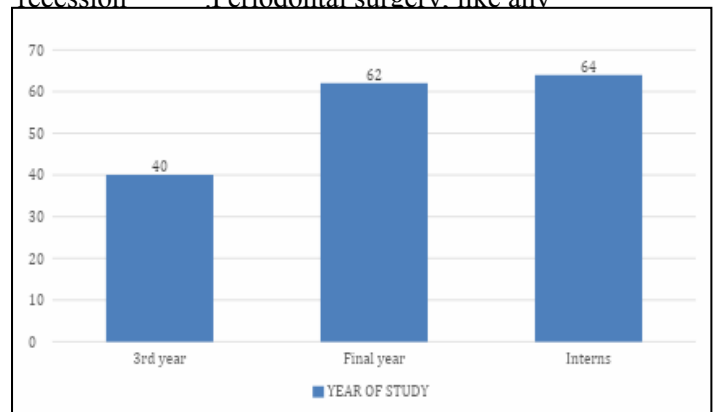
Graph 1 illustrates the age distribution of our study, showing that 96.4% of students were below 25 years old, while 3.6% were above 25 years old.

GRAPH 2: DISTRIBUTION OF YEAR OF STUDY:

Graph 2 illustrates the distribution of students by study year. The X-axis representing the study year, while the Y-axis indicating the amount of students. Out of the total 166 students, 64 are interns, 62 are in their final year, and 40 are in their third year.

Periodontal treatment, including surgery, helps reduce the rate of loss of teeth¹³. Across a span of five years or longer, patients who receive meticulous maintenance achieve similar outcomes of clinical interventions, reduced measuring probing depths and preventing of further attachment loss—regardless of whether they underwent non-surgical or surgical therapy¹. Periodontal surgery should be carried out after initial conventional periodontal therapy, as this sequence significantly reduces measuring probing depth and leads increased attachment level compared to performing periodontal surgery without prior conventional periodontal therapy¹. Periodontal pockets measuring 7 mm show the most notable reduction in pocket

depth after periodontal surgery. However, this procedure is also linked to more significant gingival recession compared to conventional periodontal therapy. For pockets deeper than 7 mm, reduction in pocket depth is comparable between periodontal flap surgery and osseous resective surgery; however, osseous surgery results in more gingival recession¹. Periodontal surgery, like any



brief use of nonsteroidal anti-inflammatory drugs (NSAIDs), including ibuprofen or rather dexamethasone¹. Blood loss during periodontal surgical procedure is typically around 37 mL. Hemorrhage usually ceases once the surgical flaps are reapproximated, and significant postoperative bleeding is primarily observed in patients using anticoagulant drugs. Localized hemostatic techniques are generally efficient in controlling post-surgical hemorrhage. As a result, severe bleeding following periodontal flap surgery is uncommon in wider community and it is typically a concern only for individuals with severe hereditary or acquired bleeding disorders, including hemophilia or those undergoing warfarin therapy¹. Comprehensive periodontal therapy, including periodontal surgery when necessary, has been shown to positively impact diseases like type 2 diabetes mellitus and rheumatoid arthritis. Documentations suggest that the periodontal treatment can improve HbA1c levels in people with type 2 diabetes are reduced by about 0.5%, regardless of any interventions². Additionally, periodontal treatment has been carried out to enhance



Disease Activity Scores (DAS28) in people with rheumatoid arthritis ²¹.

Dentists may undergo training to carry out periodontal surgery; however, it is widespread practice to send patients with advanced periodontal disease necessitating intervention to experts. In countries with postdoctoral education in periodontics, periodontists typically handle such cases, while in regions without a distinct periodontics track, oral surgeons often provide periodontal surgeries. Timely referrals play a critical role in achieving successful treatment outcomes, including tooth preservation ²². Generally, individual with moderate to severe periodontal disease, atypical condition presentations, or intricate medical histories are advised to pursue evaluation by periodontal experts ²³.

REFERENCES

- [1]. Gasner NS, Schure RS. Periodontal Disease. [Updated 2023 Apr 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan
- [2]. Kinane DF, Stathopoulou PG, Papapanou PN. Periodontal diseases. *Nat Rev Dis Primers*. 2017 Jun 22;3:17038. doi: 10.1038/nrdp.2017.38. PMID: 28805207
- [3]. Boehm TK, Kim CS. Overview of Periodontal Surgical Procedures. [Updated 2024 Jan 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan
- [4]. Alvarez-Azaustre MP, Bravo M, Magan-Fernandez A, Rodriguez-Archilla A, Llana C, Mesa F. Periodontal Treatment by Dental Undergraduate Students: Assessment of the Patient's Oral Quality of Life - A Prospective Pilot Study. *Oral Health Prev Dent*. 2021 Jun 1;19:311-319. doi: 10.3290/j.ohpd.b1453071. PMID: 34057341; PMCID: PMC11640842
- [5]. Mofidi A, Perez A, Kornerup I, Levin L, Ortiz S, Lai H, Green J, Kim S, Gibson MP. Dental Students' Knowledge, Confidence, Ability, and Self-Reported Difficulties in Periodontal Education: A Mixed Method Pilot Study. *Dent J (Basel)*. 2022 Apr 6;10(4):63. doi: 10.3390/dj10040063. PMID: 35448057; PMCID: PMC9026102
- [6]. R, Haripriya. (2020). Knowledge and Awareness About Esthetic Procedures in Periodontics Among Undergraduate Dental Students. *Bioscience Biotechnology Research Communications*. 13. 559-564. 10.21786/bbrc/13.8/197
- [7]. Gursoy, Mervi & Wilensky, A & Claffey, Noel & Herrera, David & Preshaw, P & Sanz, Mariano & Schlegelhauf, Ulrich & Trombelli, L & Demirel, Korkud. (2018). Periodontal education and assessment in the undergraduate dental curriculum-A questionnaire-based survey in European countries. *European journal of dental education : official journal of the Association for Dental Education in Europe*. 22. 10.1111/eje.12330
- [8]. Alzammam N, Almalki A. Knowledge and awareness of periodontal diseases among Jordanian University students: A cross-sectional study. *J Indian Soc Periodontol*. 2019 Nov-Dec;23(6):574-579. doi: 10.4103/jisp.jisp_424_18. PMID: 31849405; PMCID: PMC6906914(8)
- [9]. Bolla, Vijayalakshmi & Jamaluddin, Nausheen & Reddy, Kankara & Reddy, Krishnanjaneya & Mishra, Ashank & Koppolu, Pradeep. (2017). Awareness of Scope of Periodontics among Undergraduate Dental Students. *J Res Adv Dent*. 6. 70.
- [10]. Ligade, Shruti S.; Pandya, Shretika. Assessment of Awareness of Periodontal Disease among Dental Undergraduates: A Questionnaire Study. *Journal of Dental Research and Review* 7(4):p 171-176, Oct-Dec 2020. | DOI: 10.4103/jdr.jdr_64_20
- [11]. Dayakar MM, Kumar J, Pai GP, Shivananda H, Rekha R. A survey about awareness of periodontal health among the students of professional colleges in Dakshina Kannada District. *J Indian Soc Periodontol*. 2016 Jan-Feb;20(1):67-71. doi: 10.4103/0972-124X.168487. PMID: 27041841; PMCID: PMC4795139.
- [12]. Allam E, Alshibani N, Alshibani Y, Alkattan R. Evaluation of the Knowledge and Awareness of Dental Patients in Saudi Arabia on Periodontal Health and Diseases. *Open Dent J*, 2020;



- 14:
<http://dx.doi.org/10.2174/1874210602014010459>
- [13]. Matthews DC, Smith CG, Hanscom SL. Tooth loss in periodontal patients. *J Can Dent Assoc.* 2001 Apr;67(4):207-10.
- [14]. Kaldahl WB, Kalkwarf KL, Patil KD, Molvar MP, Dyer JK. Long-term evaluation of periodontal therapy: I. Response to 4 therapeutic modalities. *J Periodontol.* 1996 Feb;67(2):93-102.
- [15]. Aljateeli M, Koticha T, Bashutski J, Sugai JV, Braun TM, Giannobile WV, Wang HL. Surgical periodontal therapy with and without initial scaling and root planing in the management of chronic periodontitis: a randomized clinical trial. *J Clin Periodontol.* 2014 Jul;41(7):693-700.
- [16]. Kaldahl WB, Kalkwarf KL, Patil KD, Dyer JK, Bates RE. Evaluation of four modalities of periodontal therapy. Mean probing depth, probing attachment level and recession changes. *J Periodontol.* 1988 Dec;59(12):783-93.
- [17]. Askar H, Di Gianfilippo R, Ravida A, Tattan M, Majzoub J, Wang HL. Incidence and severity of postoperative complications following oral, periodontal, and implant surgeries: A retrospective study. *J Periodontol.* 2019 Nov;90(11):1270-1278.
- [18]. Caporossi LS, Dos Santos CS, Calcia TBB, Cenci MS, Muniz FWMG, da Silveira Lima G. Pharmacological management of pain after periodontal surgery: a systematic review with meta-analysis. *Clin Oral Investig.* 2020 Aug;24(8):2559-2578.
- [19]. Vassilopoulos P, Palcanis K. Bleeding disorders and periodontology. *Periodontol 2000.* 2007;44:211-23.
- [20]. Goyal L, Gupta S, Samujh T. Does nonsurgical periodontal therapy improve glycemic control? *Evid Based Dent.* 2023 Mar;24(1):21-22.
- [21]. Mustufvi Z, Twigg J, Kerry J, Chesterman J, Pavitt S, Tugnait A, Mankia K. Does periodontal treatment improve rheumatoid arthritis disease activity? A systematic review. *Rheumatol Adv Pract.* 2022;6(2):rkac061.
- [22]. Jeffcoat M. When to treat: when to refer. *Int Dent J.* 1993 Apr;43(2 Suppl 1):185-91.
- [23]. Krebs KA, Clem DS., American Academy of Periodontology. Guidelines for the management of patients with periodontal diseases. *J Periodontol.* 2006 Sep;77(9):1607-11.