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KNOWLEDGE AND AWARENESS REGARDING PERIODONTAL PLASTIC AND ESTHETIC SURGERY AMONG DENTAL STUDENTS AND INTERNS IN SAUDI ARABIA

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Abstract

Introduction: This article discusses various aspects of periodontal and esthetic surgery, a branch of dentistry focused on correcting soft-tissue defects involving the periodontium and frenum. It covers topics like Surgical periodontal treatments, aims to treat areas that do not respond sufficiently to non-surgical treatment, and includes different periodontal surgery and esthetic surgery, respective and regenerative periodontal surgery interventions, and awareness of dental implants as an option. **Objective:** To assess the Knowledge regarding periodontal plastic and esthetic surgery among dental students and interns in Saudi Arabia. **Methodology:** This cross-sectional study was conducted in Saudi Arabia from July 2024 to December 2024. The study plans to recruit participants through social media platforms like Twitter, Snapchat, Instagram, WhatsApp, and Facebook. The inclusion criteria are males and females who are dental students and interns from all regions of Saudi Arabia, with or without knowledge of different treatment options, who agree to participate and complete questionnaires. Excluded are non-dental students and interns' individuals. The minimum target sample size of 384 was calculated using a formula based on prevalence estimation, a 95% confidence level, and a 5% acceptable error. **Results**: The study assessed knowledge and awareness of periodontal plastic and aesthetic surgery among 473 dental students and interns in Saudi Arabia, revealing critical insights. A significant 84.8% of participants were aware of periodontal plastic surgery, yet only 78% recognized its necessity, highlighting an educational gap. Notably, 62.4% preferred surgical intervention for managing gingival defects, indicating a strong inclination toward invasive treatments. Despite 42.5% demonstrating substantial knowledge in the field, 66.2% reported low awareness, underscoring the need for enhanced educational initiatives. Additionally, knowledge levels were significantly influenced by gender, age, nationality, academic level, and GPA, pointing to areas for targeted improvement. **Conclusion**: While

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our study indicates a commendable level of awareness regarding periodontal plastic and esthetic surgery among dental students and interns in Saudi Arabia, significant gaps in knowledge persist. These findings highlight the critical need for enhanced educational initiatives to improve understanding and competency in this vital area of dental practice.

Keywords: Knowledge, Awareness, periodontal surgery and esthetic surgery, Saudi Arabia.

Introduction:

Friedman introduced the concept of mucogingival surgery in 1957, defining it as "surgical procedures designed to preserve gingiva, remove aberrant frenulum or muscle attachments, and increase the vestibule depth [1]. Untreated periodontal disease can lead to several serious oral health issues, including tooth loss, bone resorption, and tooth mobility. The attitude and awareness of individuals regarding periodontal surgery are of the highest significance [2].

Periodontal cosmetic surgery includes surgical techniques used to prevent or treat abnormalities of the gingiva, alveolar mucosa, or bone that are caused by structural, developmental, traumatic, or disease-related factors [3]. such techniques as root covering, gummy smile repair, interdental papilla construction, bone and soft tissue augmentation, and crown lengthening [4].

A questionnaire-based study published in 2024, conducted on 80 house surgeons at KMCT Dental College, revealed a significant level of awareness and understanding of periodontal plastic surgery. More than 80% of the participants were familiar with mucogingival issues and their treatment modalities, as well as the indications, prognosis, and treatment results of periodontal plastic and aesthetic surgery [5].

A gingival veneer is a periodontal plastic and an esthetic procedure. It is a prosthesis worn on the labial portion of the tooth arch to restore mucogingival shape and esthetics in areas with weak periodontal tissues [6]. In 2022, a cross-sectional questionnaire-based survey conducted in Riyadh, Saudi Arabia, discovered that a significant percentage of dental practitioners did not practice gingival veneers, and a large percentage of respondents, including general practitioners, dental students, and interns, were unaware of gingival veneer procedures [7].

According to a published study 2022, which included a cross-sectional descriptive survey conducted between October 2020 and March 2021, there was no significant difference in awareness between undergraduate and postgraduate dental students. Suggests that most dental students, regardless of their level of education, were aware of periodontal aesthetic procedures [8]. Cosmetic concerns are increasingly Esthetic restorative dentistry is a key component of dental treatment planning, particularly for anterior teeth. This field, along with operative dentistry, has been extensively studied. However, there is a dearth of research on soft tissue esthetics, which encompasses the shapes, color, and general appearance of the gingiva and associated soft tissues, especially in KSA. This article, by providing a comprehensive overview of the knowledge regarding periodontal plastic and esthetic surgery in Saudi Arabia, presents a novel contribution to the field. The study set out to assess the knowledge and awareness level of periodontal plastic and esthetic surgery among dental students and interns in Saudi Arabia.

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Materials and Methods:

Study design:

This study is a cross-sectional questionnaire survey conducted between July 2024- December 2025 based on an online structured questionnaire that was developed by authors and was carried out among dental students and interns in Saudia Arabia.

Inclusion and Exclusion Criteria:

Dental students and interns who were willing to participate and resided in Saudi Arabia met the inclusion criteria for this study. Any non-dental students and interns met the exclusion criteria, also individuals who resides outside of Saudi Arabia and under 18 years old.

Sample size:

Data collection began in July 2024 and continued until December 2024. Data collection involved a target sample of 384 patients (confidence level: 95%; margin of error: 5%). The sample size was estimated using the formula:

$n = P(1-P) * Z\alpha\ 2 / d\ 2$ with a 95% confidence level.

n: Calculated sample size.

Z: The z-value, a crucial statistical tool for the selected level of confidence (1- a) = 1.96, played a significant role in our research.

P: An estimated prevalence of knowledge.

Q: (1 – 0.50) = 50%, i.e., 0.50.

D: The maximum acceptable error = 0.05.

Therefore, the calculated minimum sample size was $n = (1.96)2 X 0.50 X 0.50/(0.05) 2 = 384$.

Method for data collection and instrument (Data collection Technique and Tools):

An online questionnaire-based survey carried out data collection. The survey was developed after consulting relevant studies [5,9,10]. It was conducted among dental students and interns. The online survey method was chosen due to its accessibility and convenience. There are three primary sections to a 25-question questionnaire about periodontal plastic surgery and esthetic procedures. The objectives of the study were explained to the participants, and their informed consent was obtained in the first section. The second section included demographic data and educational level. Twenty questions covering knowledge and awareness of plastic and aesthetic surgery in periodontics made up the third section. Six months passed between July 2024 and December 2024 during the study.

Scoring system:

The study utilized a 25-item questionnaire to assess the participants' attitudes and knowledge levels. This included 1 statement obtaining consent to participate in the survey, 4 statements gathering demographic data and 3 statements about education level, 13 knowledge-based statements. 7 statements

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evaluating awareness Scoring was straightforward: participants received 1 point for each correct answer and 0 points for incorrect responses or "not sure" answers. The maximum possible score was 33 points. The researchers then categorized the participants into three groups based on their total scores, using the original Bloom's cut-off points: Highest group: 80.0%-100.0% Middle group: 60.0% -79.0% Lowest group: 59.0% and below This grading scale and grouping method allowed the researchers to clearly distinguish the participants' performance levels and draw insights about their overall attitudes and knowledge in the subject area. A knowledge score could range from 0 to 13 points, and it was divided into three categories: Low knowledge varied, 7 points or less .Moderate knowledge varied from 8 to 10 points .High knowledge, varied from 11 points or more (≥11) .Awareness scores varied from 0 to 7 points. They were classified into three levels as follows: those with a score of 4 or below (≤ 4) were classified as having a low level of awareness, those with scores of five as having a moderate level of awareness, and those with scores of six or above (≥6) as having a high level of awareness.

Analyzes and entry method:

Method of analysis and input: "Microsoft Office Excel Software" for Windows (2021) was used to input the data into the device. For statistical analysis, the gathered data was then sent to the IBM SPSS Statistics for Microsoft Windows, Version 21.0 program.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (473). The cohort is noted to be primarily youthful, with a mean age of 23.9 years and 2.9 standard deviation, 62.1% of participants are aged 24 years or younger. The sample is slightly skewed towards the male majority, with 54.8% males, while 45.2 % females. Participants are Saudi nationals striking majority (90.9%). Participants are geographically dispersed across different regions with 39.1% in the Southern region only. This shows that most of the respondents are in their final year or intern springing a lot of focus to advanced educational stages. Additionally, the GPA data tells a story of a population that properly exceeds half (53.3%), have excellent grades that imply that its population is made up of highly academic competent as well as committed people.

Table (1): Sociodemographic characteristics of participants (n=473)

Parameter		***No.***	***Percent (%)***
Age (Mean:23.9, STD:2.9)	22 or less	116	24.5
	23 to 24	178	37.6
	25 years old	84	17.8
	26 years or more	95	20.1
Gender	Female	214	45.2
	Male	259	54.8
Nationality	Non-Saudi	43	9.1
	Saudi	430	90.9
Residential region	Northern region	38	8.0
	Southern region	185	39.1

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	Center region	65	13.7
	Eastern region	64	13.5
	Western region	121	25.6
Academic level	First year	31	6.6
	Second year	30	6.3
	Third year	41	8.7
	Fourth year	45	9.5
	Fifth year	48	10.1
	Sixth year	136	28.8
	Intern	142	30.0
GPA	Excellent (No Less Than 3.50 Out Of 4.00) Or (No Less Than 4.50 Out Of 5.00)	252	53.3
	Very Good (From 2.75 To 3.49 Out Of 4.00) Or (From 3.75 To 4.49 Out Of 5.00)	166	35.1
	Good (From 1.75 To 2.74 Out Of 4.00) Or (From 2.75 To 3.74 Out Of 5.00)	47	9.9
	Satisfactory (From 1.00 To 1.74 Out Of 4.00) Or (From 2.00 To 2.74 Out Of 5.00)	8	1.7

As shown in figure 1, It was found that a total sample of 473 was used to evaluate which type of gingival defect is the most amenable to mucogingival surgery. In 325 cases about 68.7% of the total sample, they found 'isolated class II recession on buccal gingiva alone'. 148 cases (approximately 31.3 %) were 'recession on all sides' around an anterior tooth with root exposure, whereas recession to the adjacent teeth was 'inconclusive' in 119 cases (approximately 24.6 %). Based upon these findings, isolated class II buccal recession appears to be significantly more common and may therefore be as strong a candidate for mucogingival surgical intervention as more complex cases involving large recession.

Figure (1): Illustrates who is a good candidate for mucogingival surgery among participants.

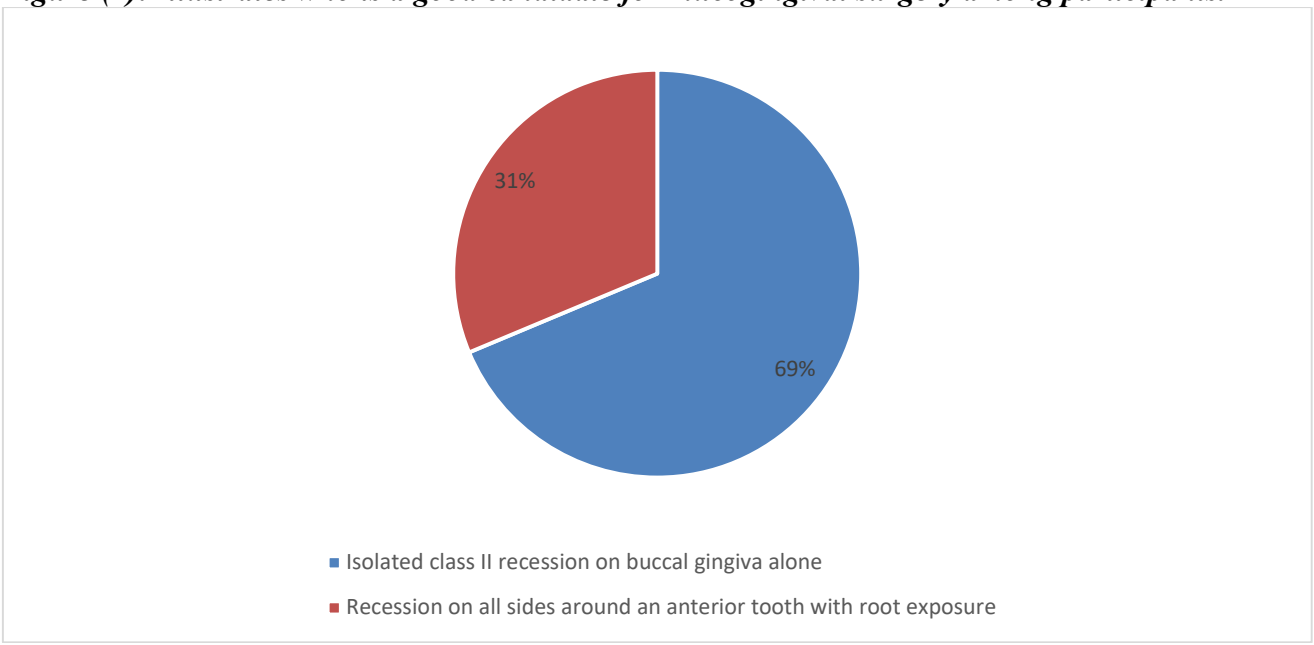

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Table 2: Data presented to provide an overall view into periodontal plastic and aesthetic surgery awareness and understanding of dental student, shows several notable findings. Eighty-four-point eight percent (84.8%) of the 473 students surveyed were aware of periodontal plastic surgery, while only 78 percent understood the necessity for the procedures. This reveals a missing educational opportunity, which could improve clinical outcomes, given that 88.4% of participants rated the technique sensitivity of these procedures above average. Interestingly, more than half of the respondents (53.3%) were not convinced about the permanence of the resulting gingival depigmentation of the treatment, which strongly points to the necessity of better discussion on the efficacy and longevity of treatment outcomes. Additionally, 78.4 of polled patients agreed that mucogingival procedures were essential for receded gums when these patients employed proper oral hygiene, illustrating an acknowledgment of the complexity between periodontal health and the need for specialized gum and bone cosmetic dentistry.

Table (2): Parameters related to knowledge regarding periodontal plastic and aesthetic surgery among dental students (n=473).

Parameter		***No.***	***Percent (%)***
Are you aware of periodontal plastic surgery?	No	72	15.2
	Yes	401	84.8
Are you aware of the need for periodontal plastic surgery?	No	104	22.0
	Yes	369	78.0
Is the periodontal plastic procedure technique sensitive?	No	55	11.6
	Yes	418	88.4
Do you think gingival depigmentation gives permanent results?	No	252	53.3
	Yes	221	46.7
Do you think a patient with receded gums requires a mucogingival procedure if inflammation persists even after performing good oral hygiene?	No	102	21.6
	Yes	371	78.4
Does a case with generalized gingival recession and horizontal bone loss, with a reduced height of periodontium require a root coverage procedure?	No	136	28.8
	Yes	337	71.2
Should malocclusion be corrected to improve the prognosis of the root coverage procedure?	No	87	18.4
	Yes	386	81.6
Which defect is a good candidate for mucogingival surgery?	Isolated class II recession on buccal gingiva alone	325	68.7
	Recession on all sides around an anterior tooth with root exposure	148	31.3
Are you aware of the term gingival biotype or phenotype?	No	119	25.2
	Yes	354	74.8
Is having a thick gingiva good enough to slow down the apical migration of the gingiva on the tooth?	No	140	29.6
	Yes	333	70.4
Does a shallow vestibule cause difficulty in	No	122	25.8

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maintaining oral hygiene?	Yes	351	74.2
Are you aware of the gummy smile treatment?	No	74	15.6
	Yes	399	84.4
Are you aware that alveolar bone can be regenerated by using artificial bone?	No	84	17.8
	Yes	389	82.2

As shown in figure (2), Analysis of the data on which treatment options are preferred for managing open interdental spaces caused by gingival recession in the anterior part of the jaws reveal a distinct preference for periodontal surgery. More specifically, from a total sample size of 473, 295 people, approximately 62.4% of them, selected periodontal surgery as their choice. On the other hand, 81 (18.9%) individuals did not want prosthetic replacement and 97 (20.5%) of participants were uncertain about their choice. These findings suggest a strong preference for surgical intervention for treatment of gingival defects, with practitioners or respondents believing that periodontal procedures are significantly more effective in removing gingival defects than prosthetic alternatives.

Figure (2): Illustrates best treatment option for open interdental spaces in anterior region of jaws among participants.

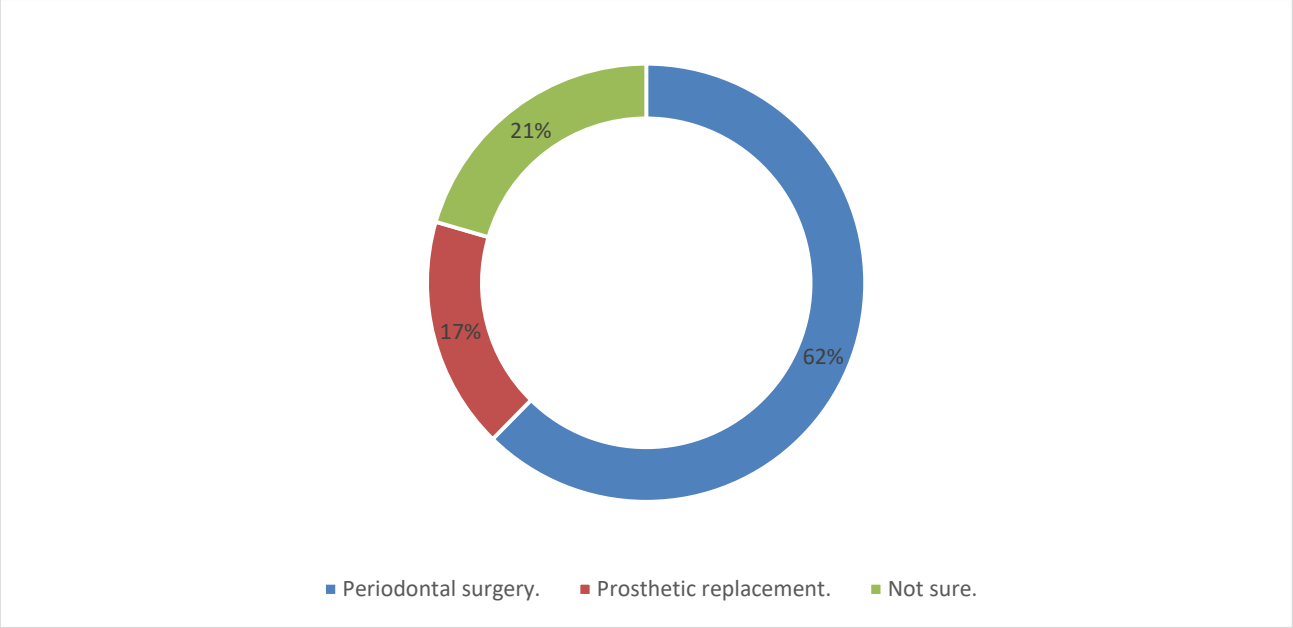

Table 3 shows data that offer a glimpse into the awareness and preferences for treatment of periodontal plastic and aesthetic surgery among a cohort of 473 dental students. An interesting finding was that a large proportion (81.6% of participants) understand that lasers may serve in the management of periodontal disease, suggesting a positive acknowledgment of the advances in dental technology. Furthermore, 62.4% preferred surgical intervention for open interdental spaces, and more than 56% for surgical treatment options in both low and high-volume situations of gingival recession, suggesting very strong preference for invasive procedures, rather than prosthetic replacements. In contrast, the large percentage of uncertainty (including 20.5–30% across multiple treatment questions) suggests an area of

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knowledge to be filled, especially in the domain of more subtle treatment decisions. Additionally, we can note that a growing acceptance of gingival veneer prostheses is evidenced by 51.2% of respondents practicing this aesthetic approach.

Table (3): participants' awareness regarding periodontal plastic and aesthetic surgery among dental students (n=473).

Parameter		***No.***	***Percent (%)***
Are you aware that LASERs can be used for the treatment of periodontal disease?	No	87	18.4
	Yes	386	81.6
Which will be your preferred treatment option for open interdental spaces (gingival recession) in the anterior region of jaws?	Periodontal surgery.	295	62.4
	Prosthetic replacement.	81	17.1
	Not sure.	97	20.5
When you have a patient with the (low volume) gingival recession of the anterior region (Miller's class I & II), what is your treatment option for that patient?	Periodontal surgery.	267	56.4
	Prosthetic replacement.	86	18.2
	Not sure.	120	25.4
When you have a patient with (high volume) gingival recession of the anterior region (miller's class III & IV), what is your treatment option for that patient?	Periodontal surgery.	266	56.2
	Prosthetic replacement.	99	20.9
	Not sure.	108	22.8
What would be your treatment of choice for inter-proximal periodontal tissue loss in between dental implant prostheses of the anterior region of jaws?	Periodontal surgery.	223	47.1
	Prosthetic replacement.	108	22.8
	Not sure.	142	30.0
Do you practice gingival veneer prostheses as a treatment option for open inter-dental spaces (gingival recession)?	No	231	48.8
	Yes	242	51.2
Are you aware of untreated periodontitis effects?	No	63	13.3
	Yes	410	86.7

Table 4 presents the data of dental students' knowledge levels in the periodontal plastic and aesthetic surgery area. Nearly half of the respondents (42.5%) answered most items correctly, indicating that a substantial fraction of the student population is well saturated with the core knowledge of periodontal aesthetics principles and practice. On the other hand, considering moderate knowledge, 38.9% of students replied that it was necessary for more educational development and training. At the same time, the 18.6% of students possessing low knowledge levels suggests there may be cause for worry regarding this group's readiness to participate productively in this nascent field.

Table (4): Shows knowledge regarding periodontal plastic and aesthetic surgery among dental students score results.

	Frequency	**Percent**
High knowledge Level	201	42.5

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Moderate knowledge	184	38.9
Low knowledge level	88	18.6
Total	473	100.0

Table 5 shows a disturbing gap between the awareness of periodontal plastic and aesthetic surgery of dental students. For instance, out of respondents, a big 24.3 % expressed moderate awareness whereas a modest 9.5 % reported high awareness. Sadly, many—approximately 66.2%—told us that they knew little to nothing about this very important aspect of dental practice.

Table (5): Shows awareness regarding periodontal plastic and aesthetic surgery among dental students score results.

	Frequency	**Percent**
High awareness level	45	9.5
Moderate awareness	115	24.3
Low awareness level	313	66.2
Total	473	100.0

Table (6) shows that knowledge regarding periodontal plastic and aesthetic surgery among dental students has statistically significant relation to gender (P value=0.039), age (P value=0.0001), nationality (P value=0.030), academic level (P value=0.0001) and GPA (P value=0.005). It also shows statistically insignificant relation to residential region.

Table (6): Relation between knowledge regarding periodontal plastic and aesthetic surgery among dental students and sociodemographic characteristics.

Parameters		***Knowledge level***		***Total (N=473)***	***P value****
		High knowledge Level	**Moderate or low knowledge**		
Gender	Female	102	112	214	0.039
		50.7%	41.2%	45.2%	
	Male	99	160	259	
		49.3%	58.8%	54.8%	
Age	22 or less	30	86	116	0.0001
		14.9%	31.6%	24.5%	
	23 to 24	73	105	178	
		36.3%	38.6%	37.6%	
	25 years old	47	37	84	
		23.4%	13.6%	17.8%	
	26 years or more	51	44	95	
		25.4%	16.2%	20.1%	
Nationality	Non-Saudi	25	18	43	0.030
		12.4%	6.6%	9.1%	
	Saudi	176	254	430	
		87.6%	93.4%	90.9%	

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Residential region	Northern region	16	22	38	0.801
		8.0%	8.1%	8.0%	
	Southern region	75	110	185	
		37.3%	40.4%	39.1%	
	Central region	25	40	65	
		12.4%	14.7%	13.7%	
	Eastern region	29	35	64	
		14.4%	12.9%	13.5%	
	Western region	56	65	121	
		27.9%	23.9%	25.6%	
Academic level	First year	2	29	31	0.0001
		1.0%	10.7%	6.6%	
	Second year	10	20	30	
		5.0%	7.4%	6.3%	
	Third year	7	34	41	
		3.5%	12.5%	8.7%	
	Fourth year	15	30	45	
		7.5%	11.0%	9.5%	
	Fifth year	22	26	48	
		10.9%	9.6%	10.1%	
	Sixth year	60	76	136	
		29.9%	27.9%	28.8%	
	Intern	85	57	142	
		42.3%	21.0%	30.0%	
GPA	Excellent	119	133	252	0.005
		59.2%	48.9%	53.3%	
	Very good	69	97	166	
		34.3%	35.7%	35.1%	
	Good	9	38	47	
		4.5%	14.0%	9.9%	
	Satisfactory	4	4	8	
		2.0%	1.5%	1.7%	

****P value was considered significant if ≤ 0.05.***

Table (7) shows that awareness regarding periodontal plastic and aesthetic surgery among dental students has statistically significant relation to gender (P value=0.008). It also shows statistically insignificant relation to age, nationality, residential region, academic level and GPA.

Table (7): Awareness regarding periodontal plastic and aesthetic surgery among dental students in association with sociodemographic characteristics.

Parameters	***Awareness level***		***Total (N=473)***	***P value****
	High or moderate awareness	**Low awareness level**		

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Gender	Female	86	128	214	0.008
		53.8%	40.9%	45.2%	
	Male	74	185	259	
		46.3%	59.1%	54.8%	
Age	22 or less	39	77	116	0.312
		24.4%	24.6%	24.5%	
	23 to 24	67	111	178	
		41.9%	35.5%	37.6%	
	25 years old	29	55	84	
		18.1%	17.6%	17.8%	
	26 years or more	25	70	95	
		15.6%	22.4%	20.1%	
Nationality	Non-Saudi	15	28	43	0.878
		9.4%	8.9%	9.1%	
	Saudi	145	285	430	
		90.6%	91.1%	90.9%	
Residential region	Northern region	14	24	38	0.485
		8.8%	7.7%	8.0%	
	Southern region	57	128	185	
		35.6%	40.9%	39.1%	
	Central region	28	37	65	
		17.5%	11.8%	13.7%	
	Eastern region	21	43	64	
		13.1%	13.7%	13.5%	
	Western region	40	81	121	
		25.0%	25.9%	25.6%	
Academic level	First year	6	25	31	0.135
		3.8%	8.0%	6.6%	
	Second year	8	22	30	
		5.0%	7.0%	6.3%	
	Third year	9	32	41	
		5.6%	10.2%	8.7%	
	Fourth year	19	26	45	
		11.9%	8.3%	9.5%	
	Fifth year	15	33	48	
		9.4%	10.5%	10.1%	
	Sixth year	47	89	136	
		29.4%	28.4%	28.8%	
	Intern	56	86	142	
		35.0%	27.5%	30.0%	
GPA	Excellent	90	162	252	0.435
		56.3%	51.8%	53.3%	
	Very good	56	110	166	
		35.0%	35.1%	35.1%	

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	Good	11	36	47	
		6.9%	11.5%	9.9%	
	Satisfactory	3	5	8	
		1.9%	1.6%	1.7%	

P value was considered significant if ≤ 0.05.

Discussion:

This study has been conducted to assess the knowledge and awareness about periodontal plastic and esthetic surgery among Saudi dental students and interns. The participant results indicate awareness at a level of over 50 percent but with considerable gaps in knowledge that require further exploration and educational intervention.

These findings are consistent with work that has earlier examined periodontal health awareness and knowledge of periodontal surgical interventions. For example, Varela-Centelles et al. [11] pointed to awareness as a critical factor in the remoulding of behaviours that impact periodontal disease, when the awareness is key to periodontal health outcomes. As with Nathania's diabetic patients, no broader public health approach to enhance knowledge and awareness of periodontal conditions can really influence treatment adherence and outcomes [12]. These studies emphasize a need for the educational integrations with the curricula of future practitioners and deter the understanding of periodontal plastic and esthetic surgery.

While we found that 84.8% of participants admitted there was a 'thing' called periodontal plastic surgery, only 78% agreed that it was necessary. This uncovers a gap between awareness and understanding, which is reflected in the literature. For instance, Varela-Centelles et al. found that although awareness of periodontal disease was high, actual knowledge in its implications and available treatment options was far lower implying that the need for targeted educational interventions [11]. In addition, most participants express uncertainty regarding the permanence of gingival depigmentation outcomes (53.3%) and this should further be combined with research indicating that patient education is needed for informed consent and treatment satisfaction [13].

Interestingly, our results revealed a preference for surgical intervention over prosthetic alternatives, with 62.4% of respondents favouring periodontal surgery for managing open interdental spaces due to gingival recession. This preference is mimicked by Graziani et al. who note, considering that surgical solutions for periodontal problem growth has become a growing trend among dental professionals to focus on surgical solutions for such issues instead of focusing on them as much [14]. Furthermore, the mention by 81.6% of participants that lasers are used to manage periodontal disease demonstrates a favourable reception of technological developments in the field of dental practice, corroborating with Voigt et al [15] findings on how innovations in periodontal treatment must be integrated.

Although respondents had relatively high levels of awareness, our study also found large uncertainty about many treatment decisions, with 20.5 to 30% indecision on many questions. So, this is an uncertainty that we have to address, because that uncertainty could affect clinical decision making as well as patient care. Like previously, dental students have been noted to have gaps in knowledge and that insufficient exposure to surgical techniques during training can cause a loss of confidence [16]. As a result, gaps in this need are addressed by improving clinical exposure and integrating educational modules encompassing comprehensive content on periodontal plastic surgery in dental curricula.

Our study showed that the level of knowledge of periodontal plastic and aesthetic surgery by the

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respondents was 42.5% of respondents with strong knowledge of core principles, 38.9% of respondents wanted to increase the knowledge. This finding was consistent with the finding of Gathariki et al., who reported that medical students tend to have very little knowledge about plastic surgery that is likely due to little professional exposure and misinformation [16]. This important and secret activity of dental practice has been identified as a notable gap in awareness of which 66.2% of participants confessed to having little to no knowledge about.

The ideas of the present study must also be acknowledged. Firstly, biased estimates can be obtained from self-reported data either through questionnaires. Secondly, the cross-sectional design of this study does not permit demonstrating causal relationships between demographic factors and knowledge levels. Deeper insight into how the participant's knowledge and awareness evolves over time as the students move through their education and clinical training would be obtained through future longitudinal studies. Additionally, the focus of the study on dental students and interns in Saudi Arabia might restrict the generalizability of the findings to other groups or regions. The further addition of a more diverse sample could prove valuable comparative data.

Conclusion:

Our study shows a good level of awareness of periodontal plastic and esthetic surgery among dental students and interns in Saudi Arabia; however, there are still significant knowledge gaps. Their results add urgency to the importance of improving education in this important facet of dental practice. Through closing these gaps, future periodontal dental professionals will better be able to provide high quality care and better patient outcomes in the field of periodontal health.

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Ethical approval:

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

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Conflict of interests:

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability:

All data associated with this study are present in the paper.

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