Case Study

# DENTAL STUDENTS AND INTERNS' CLINICAL KNOWLEDGE TOWARD CROWN LENGTHENING; A CROSS-SECTIONAL STUDY

*Abdulrahman Majed Al-Mubarak[1*], Fahad Ahmed Alkhaldi[1], Ayoub Abdullah Alghamdi[1], Mohammed Abdulrahman Almahmoud[1], Faisal Abdulkareem Alghamdi[1]*

*[1]College of Dentistry, King Saud University, Riyadh, KSA. amalmubarak@ksu.edu.sa*

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**ABSTRACT**

In the previous years, no articles were assessing the knowledge of interns and undergraduate students towards crown lengthening in Riyadh. The study aims to assess the knowledge in three dental colleges (KSU, REU, KSAU) targeting senior students and interns. A cross-sectional questionnaire-based study contains one question asking the participant if they had seen a case indicated for crown lengthening in their clinic and three clinical and radiographic photos, each one of them showing different possible management (crown coverage, Extraction, and crown lengthening than crown coverage). Different responses among participants. In general intern participants show a higher awareness regarding crown lengthening. There is a significant difference was noticed in one of the cases (the one indicated for crown lengthening) between male and female participants male students were more aware than female students (*Chi-square=15.804, P value =0.000*). Generally, most of the participant's answers to the questions were correct. And 57% of participants determine the need for crown lengthening before the discussion with the consultant. The results revealed that interns students were more aware than senior students of the need for clinical crown-lengthening procedures.

**Key words:** Crown lengthening, Periodontics, Dental students, Interns, Knowledge.

## Introduction

Through undergraduate clinical practice, many students have seen cases indicated for crown lengthening, but some of them had difficulty determining the appropriate treatment plan for such cases [1, 2]. Crown lengthening is a common periodontal procedure to restore teeth with short clinical crowns and badly destructive teeth to maintain intact suprarenal tissue attachment [3, 4]. In our research, we will assess the knowledge of dental students and interns regarding the need for crown-lengthening procedures [5, 6].

Procedures that extend supragingival tooth structure for restorative or aesthetic reasons are referred to as clinical crown lengthening [7, 8]. In the course of providing dental care, clinicians often need to extend crowns [9, 10]. When making treatment choices, they must take the biological, functional, and aesthetic needs of each case into account [11, 12]. D.W. Cohen proposed the idea of crown lengthening in 1962, and it is now a technique that often combines tissue removal or reduction, osseous surgery, and/or orthodontics for tooth exposure. To ensure a stable dentogingival complex and adequate biologic width to allow for proper tooth preparation and account for an adequate marginal placement, there must be enough tooth structure exposed above the osseous crest (about 4mm). This will ensure a good marginal seal with retention for both temporary and permanent restorations [13].

Ernesto has suggested the categorization like the gingival border levels may be surgically altered without the necessity for osseous recontouring in Type I since there is enough gingival tissue coronal to the alveolar crest. To create the ideal gingival margin position and prevent the violation of biologic width, a gingivectomy or gingivoplasty surgery will often be sufficient. Type II—This condition is distinguished by soft tissue dimensions that permit surgically relocating the gingival edge without osseous recontouring, notwithstanding a violation of the biologic width. In essence, this kind involves partitioning the crown lengthening operation into two parts, stage 1 and stage 2. A gingivectomy is performed in stage one, exposing the necessary amount of crown. When the tissues have fully recovered, step 2 is performed, including a flap operation and any necessary ostectomy to preserve the biologic width [14].

Surgery called "crown lengthening" exposes enough tooth structure to allow for restorative operations. The various procedures and methods for completing crown lengthening should be handled in a manner to prevent any violations of biologic width, which may harm the periodontium and result in gingival irritation, loss of attachment, and alveolar resorption. The purpose of surgical crown lengthening is to provide the dentist who does restorative dentistry with enough clinical crowns to enable optimal tooth repair. Subgingival caries, subgingival fractures, teeth shortened by severe caries or fractures, and naturally short clinical

crowns owing to non-exposure to the anatomic crown are grounds for surgical crown lengthening. External bevel gingivectomy, internal bevel gingivectomy with or without bone reduction, apically positioned flap with or without bone reduction, and combined procedure (surgical and orthodontic) are the approaches for surgical crown lengthening [15]. To use these strategies, several criteria must first be established. Then, the best technique for the circumstance should be selected. To assess the case's requirements, all the hard tissue and soft tissue metrics should be documented initially. Additionally, there are several ways to carry out CLS. Scalpels, cautery, and lasers are a few examples. It has been observed that lasers heal wounds more quickly than scalpels. Additionally, using lasers as opposed to scalpels results in reduced post-operative pain [16].

Multiple researchers examined the knowledge of dental students about different dental procedures. They gather the information in different ways.

1) Islam Saad in his research used a web-based cross-sectional aimed to assess the knowledge and awareness of the participants regarding dental implants and their associated complications, and he found different responses among the institutions participating in this study [17].
2) Naif A Almosa his research administrated a self-designed questionnaire and distribute it among dental students at King Saud University to assess the student's knowledge about dental ergonomics and work-related musculoskeletal disorders (WRMSDs) and he finds a lack of knowledge among KSU students and he is recommending to teach the principles of dental ergonomics among dental students before they start their clinical activities [18].
3) Arati Sharma used a cross-sectional questionnaire survey to assess the knowledge, awareness, and attitude of dental interns in Nepal towards dental implants [19]. They found that the majority of the dental interns have adequate knowledge regarding dental implants.

There were no published articles assessing the knowledge of dental students regarding the need for crown-lengthening procedures.

## Materials and Methods

A cross-sectional questionnaire-based study (Google Forms) contains one question asking the participant if they had seen a case indicated for crown lengthening in their clinic and three clinical and radiographic photos, each one of them showing different possible management. The first case is not indicated for the crown lengthening procedure. The second case indicated extraction. The last case indicated a crown lengthening procedure. The participants will be asked about the best management. All three cases were taken from published case reports. The questionnaire was conducted among interns and undergraduate students of the largest 3 dental school students in Riyadh Saudi Arabia (King Saud University, King Saud bin Abdul-Aziz University and Riyadh Elm University). Our sample consisted of 2 different groups representing different levels and their respective clinical knowledge, Intern and 5$^{th}$-year students. Each group ranges from 300 to 400 individuals making the total sample size 600 to 800. We calculate the minimum sample size with a 95% confidence level, and the sample size was 215 participants.

*Limitation of the method*

1. We could not know the exact number of undergraduate dental students and interns in our targeted universities.
2. We are not sure if most of the participants are answering the questionnaire seriously.
3. The questionnaire could not address all the possible management of treatment such as (ortho extrusion).

*Future implication*

1. Determining the current knowledge of interns and dental students by using clinical cases.
2. possible reform of the university curriculum to be more focused on the subject.
3. There were no published articles assessing the knowledge of dental students regarding the need for crown-lengthening procedures.

*Data analysis*

After data collection, the raw data was checked, cleaned, and analyzed using SPSS software [version 25]. Frequencies and percentages were calculated to describe respondents' profiles and questionnaire questions. Chi-square was utilized for significant relationships between variables. A P value < 0.05 was considered significant.

*Participants profile*

Following were participant's characteristics as presented in **Table 1**:

**Table 1.** participants' profile (N=215)

| Variables | No. | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 137 | 63.7% |
| Female | 78 | 36.3% |
| **Academic level** | | |
| Intern | 108 | 50.2% |
| 5$^{th}$ year | 107 | 49.8% |
| **College** | | |
| KSU | 139 | 64.7% |
| REU | 50 | 23.3% |
| KSAU | 26 | 12.1% |

Out of the study population, 137 (63.7%) were males, and 78 (36.3%) were females. The majority of participants were

from KSU 139 (64.7%), while 23.3% were from REU and 12.1% from KSAU. Our participants consisted of 2 different groups representing different batches and their respective clinical knowledge, Intern 108 (50.2%) and 5th-year students 107 (49.8%).

As shown in **Figure 1**, the majority of participants (90.2%) select the appropriate plan which is crown lengthening, while only 9.8% of participants fail to do so.

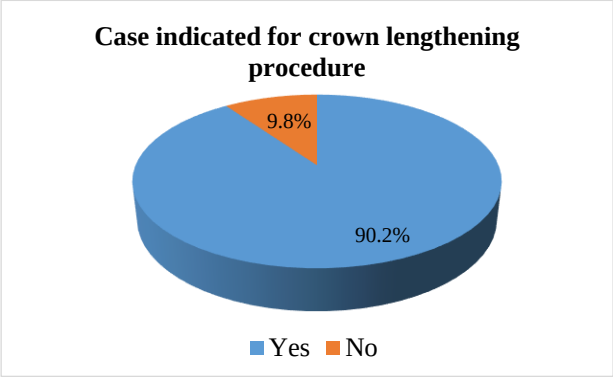


**Figure 1.** Participants' response to the case indicated for crown lengthening.

As shown in **Figure 2**, more than half of the participants (58.8%) reported that they were the ones who determined the clinical situation first, while 41.2% stated that their consultants were responsible for determining the clinical situation first.

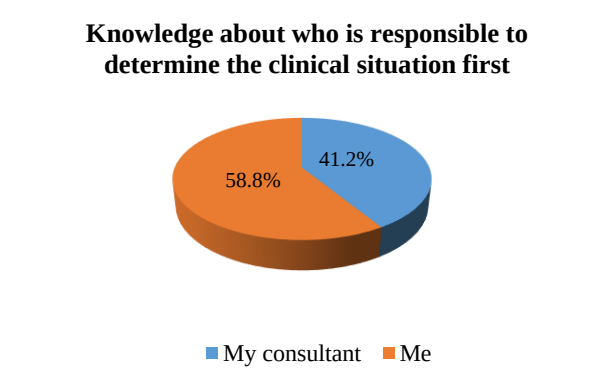


**Figure 2.** Knowledge about who is responsible to determine the clinical situation first.

As shown in **Figure 3**, more than half of the participants (54.4%) reported that the best treatment for tooth no. #46 was the "Crown coverage", while 37.7% thought the best treatment was "Crown lengthening then crown coverage", and only 7.9% of participants reported extraction as the best treatment for a tooth no. #46.

- Regarding these results, it can be concluded that more than half of the participants were aware that the best treatment for tooth number #46 is **Crown coverage.**

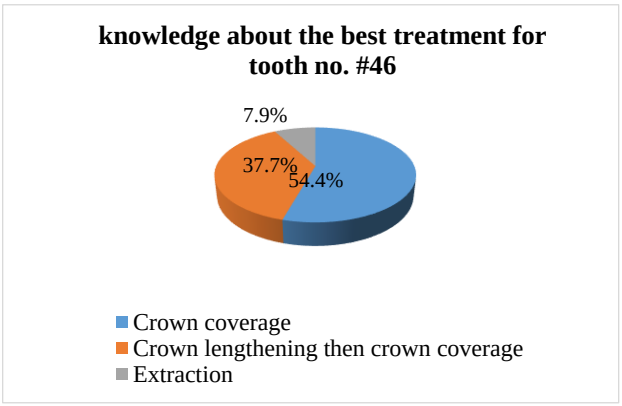


**Figure 3.** Knowledge about the best treatment for tooth no. 46

**Table 2.** Dental students and intern's knowledge according to an academic level

| | | Academic level | | Chi-square | P value |
|---|---|---|---|---|---|
| | | Intern | 5th year | | |
| "Have you ever seen a tooth indicated for crown lengthening in your clinic? | Yes | 105 | 89 | 12.029 | 0.001** |
| | | 54.1% | 45.9% | | |
| | No | 3 | 18 | | |
| | | 14.3% | 85.7% | | |
| Who is the one determining the clinical diagnosis first? | My consultant | 34 | 46 | 7.408 | 0.006** |
| | | 42.5% | 57.5% | | |

| | | | | | |
|---|---|---|---|---|---|
| | Me | 71 | 43 | | |
| | | 62.3% | 37.7% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #46? | Crown coverage (CA) | 55 | 62 | 1.473 | 0.479 |
| | | 47.0% | 53.0% | | |
| | Crown lengthening then crown coverage | 45 | 36 | | |
| | | 55.6% | 44.4% | | |
| | Extraction | 8 | 9 | | |
| | | 47.1% | 52.9% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 32 | 16 | 8.188 | 0.042* |
| | | 66.7% | 33.3% | | |
| | Lingual | 2 | 2 | | |
| | | 50.0% | 50.0% | | |
| | Buccal | 1 | 6 | | |
| | | 14.3% | 85.7% | | |
| | Mesial | 10 | 12 | | |
| | | 45.5% | 54.5% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #11? | Crown coverage | 2 | 9 | 6.164 | 0.046* |
| | | 18.2% | 81.8% | | |
| | Crown lengthening then crown coverage | 15 | 20 | | |
| | | 42.9% | 57.1% | | |
| | Extraction (CA) | 91 | 78 | | |
| | | 53.8% | 46.2% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 2 | 0 | 6.76 | 0.080 |
| | | 100.0% | 0.0% | | |
| | Lingual | 6 | 2 | | |
| | | 75.0% | 25.0% | | |
| | Buccal | 1 | 3 | | |
| | | 25.0% | 75.0% | | |
| | Mesial | 1 | 4 | | |
| | | 20.0% | 80.0% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #25? | Crown coverage | 21 | 39 | 16.823 | 0.000** |
| | | 35.0% | 65.0% | | |
| | Crown lengthening then crown coverage (CA) | 86 | 59 | | |
| | | 59.3% | 40.7% | | |
| | Extraction | 1 | 9 | | |
| | | 10.0% | 90.0% | | |
| Which surface is affected for a tooth no? #25? | Distal | 13 | 9 | 1.863 | 0.601 |
| | | 59.1% | 40.9% | | |
| | Lingual | 2 | 4 | | |
| | | 33.3% | 66.7% | | |
| | Buccal | 4 | 2 | | |
| | | 66.7% | 33.3% | | |
| | Mesial (CA) | 67 | 44 | | |
| | | 60.4% | 39.6% | | |

** significant at 0.05 level ** significant at 0.01 level

**Table 3.** Dental students and intern's knowledge according to gender

| | | Gender | | Chi-square | P value |
|---|---|---|---|---|---|
| | | **Male** | **Female** | | |
| "Have you ever seen a tooth indicated for crown lengthening in your clinic? | Yes | 127 | 67 | 2.610 | 0.106 |
| | | 65.5% | 34.5% | | |
| | No | 10 | 11 | | |
| | | 47.6% | 52.4% | | |
| Who is the one determining the clinical situation first? | My consultant | 47 | 33 | 2.714 | 0.099 |
| | | 58.8% | 41.3% | | |
| | Me | 80 | 34 | | |
| | | 70.2% | 29.8% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #46? | Crown coverage (CA) | 73 | 44 | 1.556 | 0.459 |
| | | 62.4% | 37.6% | | |
| | Crown lengthening then crown coverage | 55 | 26 | | |
| | | 67.9% | 32.1% | | |
| | Extraction | 9 | 8 | | |
| | | 52.9% | 47.1% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 37 | 11 | 4.617 | 0.202 |
| | | 77.1% | 22.9% | | |
| | Lingual | 2 | 2 | | |
| | | 50.0% | 50.0% | | |
| | Buccal | 4 | 3 | | |
| | | 57.1% | 42.9% | | |
| | Mesial | 12 | 10 | | |
| | | 54.5% | 45.5% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #11? | Crown coverage | 6 | 5 | 0.463 | 0.739 |
| | | 54.5% | 45.5% | | |
| | Crown lengthening then crown coverage | 23 | 12 | | |
| | | 65.7% | 34.3% | | |
| | Extraction (CA) | 108 | 61 | | |
| | | 63.9% | 36.1% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 2 | 0 | 2.283 | 0.516 |
| | | 100.0% | 0.0% | | |
| | Lingual | 5 | 3 | | |
| | | 62.5% | 37.5% | | |
| | Buccal | 2 | 2 | | |
| | | 50.0% | 50.0% | | |
| | Mesial | 2 | 3 | | |
| | | 40.0% | 60.0% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #25? | Crown coverage | 29 | 31 | 15.804 | 0.000** |
| | | 48.3% | 51.7% | | |
| | Crown lengthening then crown coverage (CA) | 105 | 40 | | |
| | | 72.4% | 27.6% | | |
| | Extraction | 3 | 7 | | |
| | | 30.0% | 70.0% | | |
| Which surface is affected for a tooth no? #25? | Distal | 13 | 9 | 4.413 | 0.220 |
| | | 59.1% | 40.9% | | |
| | Lingual | 5 | 1 | | |
| | | 83.3% | 16.7% | | |
| | Buccal | 3 | 3 | | |

| | | | |
|---|---|---|---|
| | | 50.0% | 50.0% |
| | Mesial (CA) | 84 | 27 |
| | | 75.7% | 24.3% |

** significant at 0.05 level ** significant at 0.01 level

**Table 4.** Dental students and interns' knowledge response based on each college

| | | College | | | Chi-square | P value |
|---|---|---|---|---|---|---|
| | | KSU | REU | KSAU | | |
| "Have you ever seen a tooth indicated for crown lengthening in your clinic? | Yes | 131 | 40 | 23 | 8.571 | 0.014* |
| | | 67.5% | 20.6% | 11.9% | | |
| | No | 8 | 10 | 3 | | |
| | | 38.1% | 47.6% | 14.3% | | |
| Who is the one determining the clinical situation first? | My consultant | 50 | 22 | 8 | 4.031 | 0.133 |
| | | 62.5% | 27.5% | 10.0% | | |
| | Me | 81 | 18 | 15 | | |
| | | 71.1% | 15.8% | 13.2% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #46? | Crown coverage (CA) | 74 | 29 | 14 | 1.970 | 0.741 |
| | | 63.2% | 24.8% | 12.0% | | |
| | Crown lengthening then crown coverage | 56 | 16 | 9 | | |
| | | 69.1% | 19.8% | 11.1% | | |
| | Extraction | 9 | 5 | 3 | | |
| | | 52.9% | 29.4% | 17.6% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 37 | 8 | 3 | 14.049 | 0.029* |
| | | 77.1% | 16.7% | 6.3% | | |
| | Lingual | 1 | 2 | 1 | | |
| | | 25.0% | 50.0% | 25.0% | | |
| | Buccal | 4 | 0 | 3 | | |
| | | 57.1% | 0.0% | 42.9% | | |
| | Mesial | 14 | 6 | 2 | | |
| | | 63.6% | 27.3% | 9.1% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #11? | Crown coverage | 3 | 3 | 5 | 17.273 | 0.002** |
| | | 27.3% | 27.3% | 45.5% | | |
| | Crown lengthening then crown coverage | 22 | 6 | 7 | | |
| | | 62.9% | 17.1% | 20.0% | | |
| | Extraction (CA) | 114 | 41 | 14 | | |
| | | 67.5% | 24.3% | 8.3% | | |
| Which surface is affected (*All answers were wrong*) | Distal | 2 | 0 | 0 | 3.246 | 0.777 |
| | | 100.0% | 0.0% | 0.0% | | |
| | Lingual | 4 | 2 | 2 | | |
| | | 50.0% | 25.0% | 25.0% | | |
| | Buccal | 2 | 1 | 1 | | |
| | | 50.0% | 25.0% | 25.0% | | |
| | Mesial | 4 | 0 | 1 | | |
| | | 80.0% | 0.0% | 20.0% | | |
| Upon below clinical and radiographic photos, what is the best treatment for tooth no? #25? | Crown coverage | 24 | 28 | 8 | 42.582 | 0.000** |
| | | 40.0% | 46.7% | 13.3% | | |
| | Crown lengthening then crown coverage (CA) | 111 | 21 | 13 | | |
| | | 76.6% | 14.5% | 9.0% | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Extraction | 4 | 1 | 5 | | |
| | | 40.0% | 10.0% | 50.0% | | |
| Which surface is affected for a tooth no? #25? | Distal | 20 | 2 | 0 | 14.566 | 0.024* |
| | | 90.9% | 9.1% | 0.0% | | |
| | Lingual | 3 | 1 | 2 | | |
| | | 50.0% | 16.7% | 33.3% | | |
| | Buccal | 2 | 2 | 2 | | |
| | | 33.3% | 33.3% | 33.3% | | |
| | Mesial (CA) | 86 | 16 | 9 | | |
| | | 77.5% | 14.4% | 8.1% | | |

** significant at 0.05 level ** significant at 0.01 level

*Dental Students and Interns' Clinical Knowledge Toward Crown Lengthening According to Academic Level*

Regarding the teeth indicated for crown lengthening, the results in **Table 2**, showed that there was a statistically significant relationship between dental students and interns' clinical knowledge of crown lengthening and their academic level (*Chi-square=12.029, P value =0.000*), where intern students were had higher knowledge than 5th-year students. Also, there was a statistically significant relationship regarding who is the one determining the clinical situation first (*Chi-square=7.408, P value =0.006*), where a high percentage of 5th-year students reported (My consultant) compared to intern students but those who reported (Me) were higher in intern students.

As shown in **Table 2**, the intern students were more knowledgeable than 5th years students regarding knowledge about the best treatment for tooth no. #11. first (*Chi-square=6.164, P value =0.05*). Moreover, a statistically significant relationship (*Chi-square=12.029, P value =0.000*), was found between dental students and interns' clinical knowledge about the best treatment for tooth no. #25 which was (Crown lengthening then crown coverage). The results revealed that intern students were more aware than 5th-year students of the best management. And because interns have seen more clinical cases compared to undergraduate students. And due to this reason, interns have more experience.

*Dental Students and Interns' Clinical Knowledge Toward Crown Lengthening According to Gender*

As shown in **Table 3**, the only statistically significant relationship found, was between dental students and interns' clinical knowledge about the best treatment for tooth no. #25 which was (Crown lengthening then crown coverage). The results revealed that male students were more aware than female students of this clinical management (*Chi-square=15.804, P value =0.000*). Therefore, more future research needs to address why female participants had some difficulty to identify the need for crown lengthening.

*Dental Students and Interns' Clinical Knowledge Toward Crown Lengthening According to College*

Regarding knowledge about teeth indicated for crown lengthening, the results in **Table 4**, showed that there was a statistically significant relationship between dental students and interns' clinical knowledge of crown lengthening and their college (*Chi-square=8.571, P value =0.014*), where KSU students were had higher knowledge than REU and KSAU students.

Also, As shown in **Table 2**, KSU students were more knowledgeable than REU and KSAU students regarding knowledge about the best treatment for tooth no. #11 (*Chi-square=17.273, P value =0.002*).

Moreover, a statistically significant relationship (*Chi-square=42.582, P value =0.000*), was found between dental students and interns' clinical knowledge about the best treatment for tooth no. #25 which was (Crown lengthening then crown coverage). The results revealed that KSU students were more aware than REU and KSAU students of clinical management. Moreover, which surface is affected for a tooth no? #25, also KSU students were more aware than REU and KSAU students of clinical management.

And that is because in our sample the majority of the participants were from King Saud University.

**Results and Discussion**

When there is delayed passive eruption, periodontal crown lengthening can be conducted to enhance the smile's appearance. This treatment can also establish a biological width and, if necessary, a ferrule length, making it simpler to maintain prosthetics for teeth with subgingival cavities, fractures, or both. Surgical crown lengthening can be accomplished using various techniques, including gingivectomy, gingivoplasty, or apically positioned prostheses, which may sometimes involve osseous resection. An average of three millimeters of supragingival soft tissue will return coronal to the alveolar crest, and vertical development can take at least three months [16]. The current study demonstrates that a cross-sectional questionnaire-based study includes one question asking the participant if they had seen a case indicated for crown

lengthening in their clinic and three clinical and radiographic photographs, each of which illustrates different possible management (crown coverage, extraction, and crown lengthening, and crown coverage). According to the findings of this study, crown lengthening is a viable treatment option for patients with aesthetic concerns. 57% of participants had already determined they required crown lengthening before speaking with the consultant. The findings revealed that students enrolled in the internship program were more aware of the necessity of clinical crown-lengthening interventions than senior students. When compared to the literature, [20] show that the clinical crown is too short, and it may result in a poor retention form, contributing to improper tooth preparation. The crown-lengthening surgical procedure extends the clinical height without compromising the biological width. Three distinct surgical techniques for crown lengthening treatments have been proposed: gingivectomy, apically displaced flap with or without respective osseous surgery, and surgical extrusion using peristome. From a clinical standpoint, compare the three crown lengthening procedures, gingivectomy, apically displaced flap with or without respective osseous surgery, and surgical extrusion. During the investigation, fifteen patients who presented themselves to the Periodontology department participated in the research. Using a random number generator, patients were assigned to one of three groups: gingivectomy (Group A), apically relocated flap (Group B), or surgical extrusion using peristome (Group C). Patients in Group A had their gingiva removed. Clinical parameters, including clinical crown length, gingival zenith, and interdental papilla height, were measured at the beginning and conclusion of the study. The clinical and radiographic evaluations conducted in the third month indicate that the surgical extrusion technique has several advantages over conventional surgical procedures. These benefits include the preservation of the interproximal papilla, the position of the gingival margin, and the absence of marginal bone loss. This procedure can effectively treat a crown structure severely compromised by a tooth fracture, dental caries, or iatrogenic causes. This is particularly essential in the frontal region, where aesthetics play a significant role, and this method must be utilized.

Indications for crown-lengthening surgery may include aesthetic augmentation, subgingival caries, exposure to a fracture, or any combination of the above. Crown lengthening surgery can be cosmetic or functional, depending on the patient's objectives. The term "functional" refers to the exposure of subgingival caries, a fissure, or both simultaneously. Most of the time, crown lengthening in the anterior sextants is discussed within the context of cosmetic surgery. When the process of passive eruption is delayed, the gingival display may become excessive. The previous literature provides the impression of relatively short clinical crowns. This issue is more noticeable in individuals with a medium or high lip line. If the patient desires a more normal-length anterior dentition, appropriate therapy that exposes the anatomical crowns may be justified. This treatment consists of enamel removal from the anatomical crowns [14, 21].

In another study conducted by [22] most dental students who participated in the study viewed an asymmetric gingival margin as unattractive, with males having a lower threshold than females. In a distinct study, pharmacy students provided significantly more positive feedback than dental students regarding the shorter crown length. Clinical students (fourth, fifth, and sixth years of study) demonstrated a higher total perceptual threshold for facial and dental aesthetics than preclinical students (first two years). People at the clinical level perceived modest changes in (1) face symmetry, (2) gingival display, (3) buccal corridors (narrow and normal corridors), and (4) crown width disparity. This can be explained by the students' prolonged exposure to clinical settings during their education. Generally, the greater one's dental education, the lower the barrier to cosmetic components. As an example, Kokich *et al*. evaluated the perspectives of dental professionals and laypeople regarding bilateral crown length adjustments. They reported that the unattractiveness threshold was 1.0 mm for orthodontists, 1.5 mm for general dentists, and 2.0 mm for the general public. Based on their evaluation of the perceptions of dental professionals and non-specialists regarding bilateral crown length changes, they reached this conclusion. Orthodontists and non-specialists perceive an asymmetric gingival margin differently by 0.5 mm and 1 mm, respectively. This variation extends to the magnitude of the disparity. Both preclinical and clinical students possessed a high perception threshold, making it challenging for both groups to perceive frontal occlusal canting.

## Conclusion

Generally, most of the participant's answers to questions were correct. And 57% of participants determine the need for crown lengthening before the discussion with the consultant. The results revealed that interns students were more aware than 5$^{th}$-year students of the need for the clinical crown lengthening procedures.

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**Ethics statement:** None

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