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A Comparative Assessment of Knowledge, Attitude and Perception about the Crown Lengthening Procedures among Dental Professionals

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ABSTRACT

Background: Dentists are compelled to make clinical decisions on a regular basis about the treatment of highly disfigured or grossly decaying teeth. The clinical crown lengthening treatment is one such tool that can be utilised to expose solid tooth structure and facilitate restorative therapy in cases of severe and subgingival caries or fracture. Hence, both private dental practitioners (clinicians) and dental academicians should be well-versed in the knowledge and application of crown lengthening methods. So the aim of this study was to assess and compare the knowledge, attitude and perception of private practitioners and academicians regarding crown lengthening procedures.

Material and Methods: A cross-sectional study was conducted among the dental academicians (n=50) and private practitioners (n=50). The data was collected using self-administered, preformed, validated, close-ended, structured questionnaire.

Result: It was seen that the crown lengthening procedures were practiced more by the clinicians as compared to the academicians. There was significant difference between the clinicians and academicians' responses regarding the knowledge of the techniques followed routinely or commonly preferred for performing the crown lengthening therapy, with the clinicians having more knowledge regarding the procedure. There was no significant difference between attitude of clinicians and academicians regarding crown lengthening procedures.

Conclusion: It was found that significant proportion of the respondents had inadequate knowledge about the crown lengthening procedures, therefore, formal training and reinforcement are required.

Keywords: Crown lengthening procedures, clinicians, academicians, reinforcement.

INTRODUCTION

Due to the inability to restore extensively disfigured or grossly decayed teeth due to a lack of sufficient crowns, a clinical crown lengthening surgery is required prior to restorative treatment of such teeth.[1]

The clinical crown lengthening procedures are the procedures designed to increase the extent of supragingival tooth structure for restorative and aesthetic purpose.[2] The dentists have to weigh the clinical findings and patients concerns in a balance to determine whether the tooth/teeth are needed to be extracted or should be restored. We are, of course, in the era of dental implants, and the use of dental implants to replace and restore lost tooth/teeth is

becoming more common in clinical practises, thus the need to save severely damaged teeth is diminishing. This does not, however, imply that dentists should forgo regularly used techniques for preserving natural teeth,[3] the clinical crown lengthening procedure is one such technique.

In addition, if a patient is unwilling to undergo extraction but desires to keep part or all of his or her own dentition, the dentist should consider honouring such requests if the outcome of the procedure is foreseeable. [3] When caries or fractures are extensive and subgingival, a dentist opts to use crown lengthening therapy to expose the solid tooth structure and thus to facilitate restorative therapy.[3] In addition to subgingival cavities or fractures and restorative demands, the clinical crown lengthening method can be employed in cases of uneven gingival contour, gummy smile, to produce ferrule for restoration, and to maintain biologic width.[4]

Although crown lengthening is a periodontist's specialty, a general dentistry practitioner/clinician handles the majority of the population, therefore their knowledge, attitude, and perception of periodontal disorders and their therapy are critical. [5]

The present study was conducted to assess and compare the knowledge, attitude and perception of the crown lengthening procedures as the treatment option among the dental professionals. The study also aimed to identify and address the existing gaps and deficiencies in the knowledge, attitude and perception of the crown lengthening procedures among the target group.

MATERIAL AND METHODS

This was a cross-sectional, questionnaire based study, conducted among the dental academicians and private practitioners separately to assess their knowledge, attitude and perception regarding the crown lengthening procedures. The total sample size was 100 study participants, 50 in each group i.e. 50 private practitioners (clinicians) and 50 academicians. All the dental academicians and private practitioners with minimum of Bachelor of Dental Surgery degree, willing to participate in the study were included. Dental academicians working in dental college with or without private practice were included. The dental private practitioners registered in the Indian Dental Association (IDA) and practicing in only a private set up were included.

A self-administered, close-ended, structured questionnaire having three sections; seven questions on knowledge, two on attitude and three questions on practice was used for data collection. The data was thus collected by distributing the questionnaire among the participants included in the study.

STATISTICAL ANALYSIS

The data collected was processed and tabulated suitably by highlighting all the parameters selected. The theoretical information was converted in numbers by ranking the Likert scales. The data for this research was analysed by using non-parametric tests, particularly chi-square test for analysing the data and testing of hypothesis with the help of M. S. Excel and SPSS version 13.0. A $p < 0.05$ was considered statistically significant for all analysis.

RESULTS

A total of 100 completely filled questionnaires were analysed that corresponds to a response rate of 100%. Of those received, 50 (50%) were from the dental academicians and 50 (50%) were from the dental private practitioners (clinicians). Among the dental academicians, 33 (66%) were MDS and 17 (34%) were BDS; whereas among the dental private practitioners (clinicians), 27 (54%) were MDS and 23 (46%) were BDS degree holders. In all 60 (60%) dental professionals participating in the study had MDS degree and 40 (40%) had a BDS degree.

On comparing the knowledge of both the groups (Table 1), there was significant

difference in the responses regarding the routinely followed or commonly preferred technique of crown lengthening procedures with clinicians having more knowledge about techniques as compared to the academicians. From the responses regarding the biologic width as a crucial factor when performing the crown lengthening procedures, it was seen that academicians had more knowledge on biologic width as compared to clinicians but the difference was not significant. Also there was no significant difference in the response regarding the conditions in which the dental professionals consider crown lengthening as a treatment option.

Table 1. Comparison of Knowledge regarding crown lengthening procedure among the two groups.

KNOWLEDGE				
In which of the following conditions do you consider crown lengthening procedures as a treatment option? (more than one option can be marked	**Clinicians (%)**	**Academicians (%)**	**Chi-square value**	**p-value**
Restorative needs	94.00	100.00	0.01512	1
Subgingival caries	92.00	100.00		
Produce a ferrule for restoration	90.00	88.00		
Uneven gingival contour	70.00	74.00		
Gummy smile	48.00	56.00		
Maintenance of biologic width	56.00	68.00		
Have you undergone any formal training in performing crown lengthening surgeries?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Yes	30.00	44.00	2.1021	0.147
No	70.00	56.00		
Total	100.00	100.00		
Which of the following different techniques of Crown lengthening procedure are you aware of? (more than one option can be marked)	Clinicians (%)	Academicians (%)	Chi-square value	p-value
External bevel gingivectomy	96.00	98.00	0.04846	1
Internal bevel gingivectomy with bone reduction	98.00	98.00		
Internal bevel gingivectomy without bone reduction	96.00	96.00		
Apically positioned flap with bone reduction	68.00	80.00		
Apically positioned flap without bone eduction	50.00	62.00		
Combined technique	26.00	36.00		
Orthodontic extrusion	42.00	50.00		
None	0	0		
Which technique is followed routinely or commonly preferred?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
External bevel gingivectomy	72.00	48.00	9.7848	0.041*
Internal bevel gingivectomy with bone reduction	74.00	48.00		
Internal bevel gingivectomy without bone reduction	72.00	48.00		
Apically positioned flap with bone reduction	16.00	8.00		
Apically positioned flap without bone reduction	2.00	6.00		
Combined technique	2.00	6.00		
Orthodontic extrusion	14.00	20.00		
None	26.00	50.00		
Do you have knowledge regarding biologic width?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Yes	58.00	84.00	8.2079	0.004*
No	42.00	16.00		
Total	100.00	100.00		
Maintaining biologic width is a crucial factor when performing crown lengthening procedure?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Strongly agree	26.00	48.00	5.2417	0.072
Agree	32.00	24.00		
Disagree	32.00	22.00		
Strongly disagree	10.00	6.00		
Total	100.00	100.00		
While performing crown lengthening procedure which variables do you take into consideration?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Adequate width of attached gingiva	46.00	14.00	21.396	<0.0001*
Proper crown/root ratio	24.00	10.00		
Both	30.00	76.00		
None	0.00	0.00		
Other	0.00	0.00		
Total	100.00	100.00		

*** Significant**

The results also showed that only 30% clinicians and 44% academicians had undergone a formal training for performing crown lengthening surgeries which accounts only 37% of the total study participants.

While taking in consideration the adequate width of attached gingiva and proper crown-root ratio as variables important during performing the crown lengthening, it was seen that majority of academicians (76%) considered both the factors while there were some clinicians (46%) who majorly took only the adequate width of attached gingiva into consideration.

The attitude of dental academicians as well as dental private practitioners towards crown lengthening procedures was positive and there was no significant difference in the responses. (Table 2)

Table 2. Comparison of Attitude regarding crown lengthening procedure among the two groups.

ATTITUDE				
Do you refer patient to a periodontist for crown lengthening surgeries or call a periodontist for consultation?	**Clinicians (%)**	**Academicians (%)**	**Chi-square value**	**p-value**
Yes	56.00	38.00	3.2517	0.0713
No	44.00	62.00		
Total	100.00	100.00		
A. If yes- How often do you call a periodontist for consultation or refer patient to a periodontist?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Once a week	28.57	36.84	0.6529	0.7214
Twice a week	42.86	31.58		
Once a month	28.57	31.58		
Other (Please specify-)	0.00	0.00		
Total	100.00	100.00		
B. If no- Please tick any of the following reasons	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Carry out crown lengthening surgeries yourself	18.18	12.90	1.2831	0.5264
Not satisfied with the results of crown lengthening	0.00	0.00		
Have very few patients who get motivated for crown lengthening procedure	18.18	9.68		
Other (Please specify-)	63.64	77.42		
Total	100.00	100.00		
What is your opinion about the cost effectiveness of the crown lengthening procedure?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Beneficial to all concerned	32.00	22.00	2.0685	0.3554
Too costly for the patients	44.00	58.00		
Value for money	24.00	20.00		
Total	100.00	100.00		

Table 3. Comparison of Practice regarding crown lengthening procedure among the two groups.

PRACTICE				
Do you practice crown lengthening procedures in your clinics?	**Clinicians (%)**	**Academicians (%)**	**Chi-square value**	**p-value**
Yes	82.00	50.00	11.4	<0.0001*
No	18.00	50.00		
Total	100.00	100.00		
How often do you perform crown lengthening procedure in your clinic?	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Never	18.00	50.00	11.632	0.0087*
Sometimes	26.00	14.00		
Often	28.00	16.00		
Very often	28.00	20.00		
Total	100.00	100.00		
After treatment plan presentation for crown lengthening therapy, did the patient	Clinicians (%)	Academicians (%)	Chi-square value	p-value
Return for treatment	64.00	52.00	1.5597	0.4584
Chose extraction	12.00	14.00		
Refused surgical treatment	16.00	26.00		
Dentist deferred treatment	8.00	8.00		
Total	100.00	100.00		

*** Significant**

When comparison was done regarding the practice of the crown lengthening procedure among the clinicians and academicians it was found that 82% clinicians performed CLP in contrast to the 50% academicians who performed this procedure and the

difference was statistically significant. Also, there was a statistically significant difference in the responses regarding the frequency of performing crown lengthening procedure. Also, the results showed no statistically significant difference in the percentage of patients that returned for treatment after treatment plan presentation by the clinicians and academicians for CLP. (Table 3)

DISCUSSION

When the crown structure is severely compromised by caries or fractures, a more intricate restorative treatment such as crown lengthening should be explored as a therapeutic option rather than precisely extracting and replacing the tooth/teeth, assuming that the treatment effects are predictable.[6]

Clinical crown lengthening methods extend the supragingival tooth structure for restorative or cosmetic reasons.[2] In the practise of dentistry, clinicians frequently confront the need for crown lengthening operations and must make treatment decisions based on how best to address the biological, functional, and cosmetic needs of a specific patient.[1]

Crown lengthening operations are used for a variety of reasons other than restorative needs, including uneven gingival contour, gummy smile, producing a ferrule for restoration, and maintaining biologic width.[4] Dental caries and fractures were the most important characteristics that predisposed teeth to crown lengthening surgery, according to Amini-behbahani A et al. (2014), who conducted a study to identify the most important indications of crown lengthening surgery.[7]

The present study aimed to compare the knowledge, attitude and perception of crown lengthening procedures among dental private practitioners and dental academicians and also to identify and address the existing gaps and deficiencies in the knowledge, attitude and perception of the target group.

It was seen from the responses that 82% of clinicians while only 50% of academicians practiced the crown lengthening surgeries. The frequency of performing the crown lengthening procedures was significantly more by the clinicians as compared to the academicians.

Rayn Mcgary et al. (2017)[8] conducted a study to determine the frequency of crown lengthening procedures and to evaluate the restorative success of crown lengthening. They discovered that crown lengthening was required in about 1-10 percent of adult patients, primarily for molars and premolars with interproximal, recurrent caries close to pulp, and that teeth restored with crown lengthening were successfully restored and retained.

The responses of participants regarding the questions based on knowledge showed that the clinicians had more knowledge about the techniques routinely used or commonly performed than academicians. However, the responses on questions regarding biologic width as a crucial factor in performing crown lengthening procedures, the academicians had more knowledge on biologic width as compared to the clinicians, but there wasn't a significant difference. This difference may be attributed to more exposure of theoretical knowledge among dental academicians as they are recruited from institutes which have post-graduate courses as compared to the private practitioners.

The various techniques used for the crown lengthening procedures are- external bevel gingivectomy, internal bevel gingivectomy with or without bone reduction, apically positioned flap with or without bone reduction, combined (surgical and orthodontic) technique or the orthodontic extrusion. Both the study groups were aware about majority of above-mentioned techniques.

The study also included questions on previous training in performing the crown lengthening surgeries, from which it was seen that a large proportion of participants (63%) did not receive any formal training in

performing crown lengthening surgeries which included 70% of total clinicians and 56% of total academicians. The lack in knowledge about the crown lengthening procedures may be because majority of dental professionals were never formally trained in that regard.

The attitude of dental professionals regarding the crown lengthening was positive and there was no significant difference in the responses received from dental academicians and dental private practitioners. This positive approach should be viewed as an opportunity to uncover flaws and enhance understanding of crown lengthening methods, as well as organising for a formal crown lengthening training programme to give patients the best possible treatment. [9]

There are certain limitations of our study. Since it was a questionnaire study, knowledge, attitude, and perception about the crown lengthening procedures among the respondents may or may not be predicted. Further studies are needed to evaluate the knowledge, attitude, and perception about the crown lengthening procedures by taking in-depth interviews, focussed group discussions, comparisons between different age groups, years of experience, different specialties, etc. Another limitation of the study was that the sample size was small, and hence, it is difficult to generalize the findings to the larger population.

CONCLUSION

It was found that a significant proportion of respondents had inadequate knowledge regarding the crown lengthening procedures, also a significant proportion of respondents did not practice the crown lengthening procedures. However, a formal training and reinforcement regarding the crown lengthening procedures is required as crown lengthening is one of the procedures in which a dentist can address both the functional and aesthetic demands.

Declaration by Authors

Ethical Approval: Approved

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