

KNOWLEDGE TOWARD MANAGEMENT OF ADVANCED GINGIVAL RECESSION AMONG DENTAL PROFESSIONALS IN KSA

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ABSTRACT

Gingival recession is the displacement of marginal tissue apical to the cemento-enamel junction (CEJ) and exposure of the root surface to an apical shift of the gingival margin. Gingival recession can cause root caries and sensitivity if untreated early. To assess knowledge of treatment options for advanced gingival recession and to assess the satisfaction of healthcare workers in dental with treatment options of an advanced gingival recession. A cross-sectional study targets a population of dental professionals including specialists, dentists, interns, and students in Saudi Arabia. A Simple Random convenient questionnaire will be distributed among all dental professionals. data analysis was performed using SPSS version 22. Descriptive statistics was conducted for all study variables, which include the measure of prevalence, means, standard deviation, and shape of distribution. The study included 540 participants, 52% of them were males and 48% were females. 19.3% of participants always record gingival recession while examining the patient. 62% of participants follow the Miller classification to record gingival recession, 8.1% follow the Cairo classification, and 3.7% use other classifications. The most common cause of the advanced gingival recession was 40.2% periodontal disease, 5.2% traumatic deep bite, 5% trauma from removable appliance or restoration, 1.5% high frenal attachment, and 46.7% reported all causes. Compared to international figures, Saudi dentists had moderate knowledge of advanced gingival recession management. To provide timely specialized intervention, there is an increased need to raise knowledge among dental professionals about the potential scope of periodontics.

Key words: KSA, Dental professionals, Gingival recession, Root surface.

Introduction

The repositioning of marginal tissue apical to the cemento-enamel junction (CEJ), which exposes the root surface, is known as gingival recession [1]. Gingival recession can cause hypersensitivity, poor aesthetics, inflammation and plaque retention, root caries, or cervical noncarious lesions. It's a widespread dental ailment that impacts a lot of people. In the US, 23% of persons between the ages of 30 and 90 have one or more tooth surfaces with gingival recession of three millimeters or greater. The incidence, extent, and severity of gingival recession increased with age; at least forty percent of young individuals and up to 88 percent of older adults had at least one location with recession of one millimeter or more. Its origin involves several causes, such as bone dehiscence, incorrect restorations, traumatic tooth-brushing, invasion of the frenal and muscular attachments, periodontal disease, tooth malposition, orthodontic-movement, and oral habits. Several patient-centered issues, including root sensitivity, a

higher risk of root caries, trouble controlling plaque, and aesthetic difficulties, can be brought on by gingival recession [2]. Additionally, exposed roots are more vulnerable to erosion and abrasion. To increase surgical root coverage, several inventions, adjustments, and variants have been made [3]. One prevalent periodontal disease that impacts the dental look, plaque management, and hypersensitivity is gingival recession (GR) [4]. Moreover, non-carious cervical lesions can form and root caries can occur on exposed root surfaces [5]. According to longitudinal research, those who maintain good dental hygiene are likely to see a gradual deepening of untreated gingival roughness [6]. "The movement of marginal-tissue apical to the cemento-enamel-junction (CEJ)" is the definition of gingival-recession. Gingival-recession has been categorized using a variety of schemes. The most often used categorization of gingival recession is Miller's.

The literature has proposed several categories to help in gingival recession diagnosis. The initial categorization was

put up by Sullivan and Atkins in 1968. The depth and width of the fault served as the foundation for this categorization scheme. He suggested four categories: shallow-wide, deep-narrow, shallow-narrow, and deep-wide.

The Miller classification system, which was first put forward in 1985, is still the most used approach for characterizing gingival recession. He has mostly used the following criteria to classify gingival-recession defects: The degree of gingival recession faults and the degree of loss of hard and soft tissues in the interdental spaces around them. The fact that it may be used to forecast the ultimate level of root coverage after a free-gingival graft operation is noteworthy.

There are several categorization schemes in use, and each scheme provides benefits of its own. No categorization system is comprehensive and unending; with time, with constant application, one learns to appreciate the benefits and drawbacks of each system. Furthermore, significant outcome predictability was made possible by the development of bilaminar-connective tissue-grafting procedures alone. A bilaminar procedure for isolated gingival-recession defects that entails enclosing the recession location in a pouch or envelope to receive a connective tissue transplant. To treat numerous gingival recessions, other surgical root coverages avoid dividing the intermediate papilla and improve blood flow to the flap by excising a tunnel beneath the gingival recessions to accept the connective tissue graft. These two techniques were reported with highly successful root-coverage [2].

Recession therapy should result in both periodontal regeneration (i.e., development of root-cementum, periodontal-ligament, and alveolar bone) and root covering with soft tissue to achieve physiological probing depth and long-term stability. To treat these challenging Miller class III or RT2 recessions, several mucogingival procedures have been devised, including tunnel methods, coronally advanced flaps, free gingival grafts, rotating techniques, and two-stage surgeries [3]. Both the twentieth century (pre-twentieth century techniques) and the twenty-first century (post-twentieth century techniques) saw the development of these methods. In an attempt to increase the amount of blood available in the recipient region, contemporary modifications of historical protocols have been proposed in this century; nonetheless, there is little data to support their predictability. The results of the many GR therapeutic alternatives have been inconsistent.

Non-surgical approach treatment

Controlling the variables that cause periodontal inflammation is the main objective of phase I therapy; this entails teaching the patient how to remove bacterial plaque or biofilm. Scaling, root planning, and other treatments including caries control, replacing damaged restorations, occlusal therapy, orthodontic tooth movement, and quitting confusing behaviors like tobacco smoking are all included

in phase I therapy. Following phase I therapy, a thorough reevaluation is necessary to ascertain the best course of treatment and establish a prognosis. Phase I treatment is often sufficient to manage periodontal disease in many individuals, negating the need for further surgery. Phase I therapy is a helpful part of treatment for patients who need surgery because it allows tissue to repair, which enhances surgical management and the tissues' ability to mend. Patients who experience 5 mm or more of attachment loss following phase I treatment and those with significant pocket depths should be evaluated for periodontal-surgical intervention.

Reducing pocket depths, increasing periodontal attachment levels, and lowering inflammation levels (bleeding with probing) can all be achieved with scaling and root planning alone. The data suggests that certain systemic antibiotics, such as metronidazole and tetracycline, improve attachment levels by an extra 0.35 mm and 0.40 mm, respectively, when used in conjunction with scaling and root-planning practices.

Strong data supports the notion that locally administered, supplementary, controlled-release antibiotics have a recognized safety profile and greatly increase the efficacy of SRP. When combined with adjunctive therapy by authorized complete prescription instructions, SRP + therapy may establish a new benchmark for nonsurgical-periodontal therapy in the treatment of chronic adult periodontitis (3096).

Surgical treatment

The degree of periodontal disease and the effectiveness of the first phase of treatment determine whether phase II therapy or surgery is required. When access is needed for root treatment or to rectify anatomic or morphologic problems, periodontal surgery—which encompasses plastic, cosmetic, restorative, and regenerative procedures—becomes necessary.

Techniques to Increase-attached-gingiva: The following categories are provided to help make the procedures and the outcome of the operation easier to understand:

- Gingival enlargement in the recession-affected region. On a recipient bed, the donor graft tissue (free or pedicle) is positioned apical to the recessed gingival margin. When there is gingival and bone recession, the denuded root surface is not attempted to be covered. Root-covering, or gingival-augmentation coronal to the recession. The denuded root surface is covered with donor graft tissue (free or pedicle). Oral hygiene practices are improved by the apical and coronal expansion of the connected gingiva, although only the latter can address an aesthetic issue. This goal can be achieved for pre-prosthetic reasons by enlarging the keratinized-gingiva coronal to the recession and apically. A greater grasp of the methods needed to accomplish the goals is provided by seeing the objectives as either coronal, apical, or both 3630. Restoring function, comfort, predictability,

lifespan, ease of maintenance and restorative care for patients are all therapeutic aims that can only be achieved with a well-designed multidisciplinary approach, the pillars of which are precise diagnosis and thorough treatment planning. This idea is further supported by the intricate relationship that exists between effective restorative dentistry and periodontal care. Periodontal health and dental restorations are closely related and interdependent. For restorations to last a long time, the periodontium has to stay in good health to preserve the teeth (3878). Restorations need to be carefully handled in several locations to ensure that they blend in harmoniously with the surrounding periodontal tissues for the periodontium to be healthy.

Taking Care of Patients with gingival-recession and the Gingival Embrasure Form Depending on whether the patient is receiving therapy in the front or posterior areas of the mouth, there are differences in managing the gingival embrasure form for patients with gingival-recession.

To remove the appearance of big, open embrasures in aesthetic regions, the interproximal contacts must be carried apically toward the papilla. Using tissue-colored ceramics, it is also feasible to bake porcelain papillae directly onto multiple-unit restorations. Subepithelial connective tissue grafts (CTGs) yield the greatest outcomes for consistent and long-term root covering (RC), according to several thorough assessments [6, 7]. GR treatment results, however, may be influenced by defect aspects, such as defect size (depth, breadth), location (maxilla, mandible), defect number (single, multiple), and soft tissue architecture. (tooth position; frenum/muscle pull; papilla height/width; vestibular depth); and (quality/quantity of keratinized tissue) [5-8]. Despite the abundance of research on GR treatment, there is no substantial data on the effects of site characteristics including vestibular depth and root prominence, as well as results at sites other than maxillary canines and premolars. For gingival recession patients, surgical repair of the problem is the most commonly recommended course of therapy. Soft-tissue abnormalities in the periodontium and frenum are repaired by periodontal plastic surgery, often known as mucogingival operations. Both the treatment of abnormalities in esthetic zones and the restoration of periodontal health would benefit from advancements and improved procedures. Furthermore, we must comprehend the range of methods employed in the management of these soft-tissue irregularities. Due to a lack of awareness, understanding, and professional ineptitude, many dentists disregard these perioplastic treatments in their usual practice. Our aim of this paper is to assess the knowledge of dental professionals of the different treatment options to manage advanced gingival recessions.

Materials and Methods

Study design

This is an observational cross-sectional descriptive design to achieve the aims of this study was conducted in Saudi

Arabia. The target population in this study is all dental professionals including dentists and interns. In the private and governmental sectors. Simple Random convenient Sampling

Sample size

This study will be done at a 95 % confidence interval and, a 5 % margin of error. The sample size was determined using $N = z^2 p \frac{1-p}{d^2}$ (kish 1965 Formula) $Z = 1.96$ when $\alpha = 0.05$ $p =$ proportion of the estimated knowledge $d =$ precision of the estimate (error margin)

So, the calculated minimum sample size was $N = (1.96)^2 \times 0.50 \times 0.50 \div (0.05)^2 = 384$. Plus a 20 percent non-response rate, the total sample size was estimated to be 464.

Analyzes and data collection methods

We will use a prepared questionnaire that will be distributed among all dental professionals including specialists, dentists, interns, and students. After collecting data from these questionnaires, MS Excel 2010 was used for data entry, and data analysis was performed using SPSS version 22 (Statistical Package for Social Sciences). Descriptive statistics was conducted for all study variables, which include the measure of prevalence, means, standard deviation, and shape of distribution.

Results and Discussion

The study included 540 participants, 52% of them were males and 48% were females. 67.6% of participants were general dentist practitioners and 32.4% were dental interns. As for years of experience, 33.3% of participants were interns, 33.5% had less than 3 years of experience and 18.1% had 3- 10 years of experience. 58.5% of participants work in governmental hospitals while 35.6% work in private hospitals as illustrated in **Table 1**.

Table 1. Sociodemographic characteristics of participants (n=540)

	Parameter	No.	%
Gender	Male	281	52.0
	Female	259	48.0
occupation	Dental intern	175	32.4
	General Dentist Practitioner (GDP)	365	67.6
Years of experience	Intern	180	33.3
	Less than 3 years	181	33.5
	3-10 years	98	18.1
Workplace	More than 10 years	81	15.0
	Governmental	316	58.5
	Private	192	35.6
	University	4	.7
	Both	28	5.2
	The Al Jawf Province	23	4.3

The province of workplace	The Aseer Province	36	6.7
	The Eastern Province	32	5.9
	The Hail Province	68	12.6
	The Madinah Province	29	5.4
	The Makkah Province	160	29.6
	The Qassim Province	44	8.1
	The Riyadh Province	148	27.4

Figure 1 shows that 62% of participants follow Miller's classification to record gingival recession, 8.1% follow Cairo's classification, and 3.7% use other classifications.

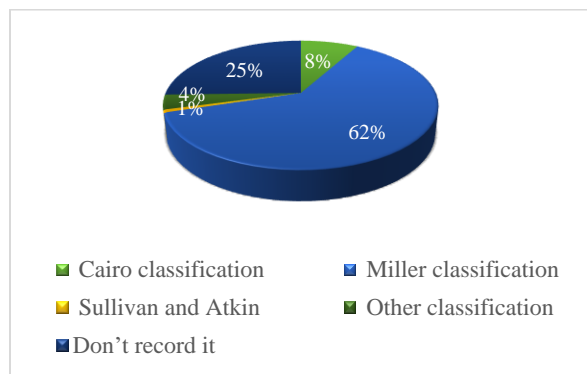


Figure 1. Classification used to record gingival recession among study participants

In the **Table 2**, 19.3% of participants always record gingival recession while examining the patient, 57.6% sometimes and 10.4% rarely do. 38.5% of participants reported that the most affected age group with gingival recession in practice is 51- 60 years old. Reasons patients seek treatment for gingival recession were reported as 77.8% dentine hypersensitivity, 56.7% aesthetic causes, and 15% food impaction. The most common cause of the advanced gingival recession was 40.2% periodontal disease, 5.2% traumatic deep bite, 5% trauma from removable appliance or restoration, 1.5% high frenal attachment, and 46.7% reported all causes.

Table 2. Participants experience with gingival recession (n=540)

Parameter	No.	%	
Record the gingival recession while examining the patient	Always	104	19.3
	Sometimes	311	57.6
	Rarely	56	10.4
	Never	69	12.8
The most affected age group with the gingival recession in practice	20 to 30	48	8.9
	31 to 40	52	9.6
	41 to 50	169	31.3
	51 to 60	208	38.5
	61 and above	63	11.7
Reason/s patients seek treatment for gingival recession (Bias risk)	Aesthetic causes	306	56.7
	Dentine hypersensitivity.	420	77.8
	Food impaction	81	15.0
	Phonetic problem.	27	5.0
The most common cause of advanced gingival recession	Traumatic deep bite	28	5.2
	Trauma from removable appliance or restoration	27	5.0
	High frenal attachment	8	1.5
	Periodontal disease	217	40.2
	Orthodontic tooth movement beyond the envelope of the bone	8	1.5
	All above	252	46.7

Figure 2 shows that the preferred method of non-surgical management of gingival recession was reported as

monitoring in 52.8%, adhesive restoration in 31.7%, gingival prosthesis in 9.6%, and orthodontic space closer in

5.9%.

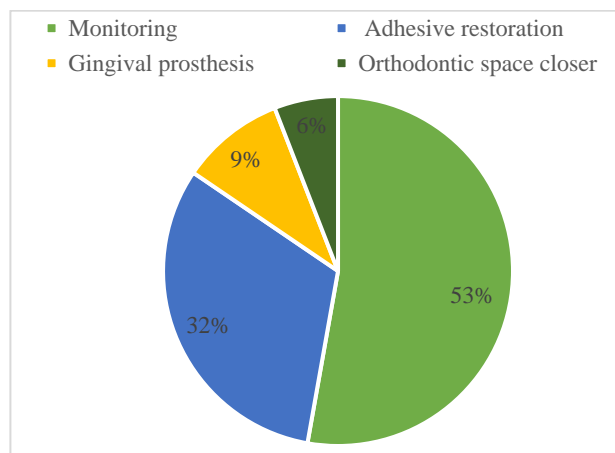


Figure 2. Preferred method of non-surgical management of gingival recession

As illustrated in **Table 3**, 29.4% reported acrylic base prosthetic veneer as the best material to give better aesthetic results and have a better adaptation to soft tissue when fabricating indirect gingival veneer. 64.3% were aware of different surgical approaches to treat advanced gingival recession. 22.2% prefer to carry out extraction followed by implant placement rather than treating advanced gingival recession.

Table 3. Knowledge of participants of gingival recession (n=540)

Parameter	No.	%	
Best materials give better aesthetic results and have better adaptation to soft tissue when fabricating indirect gingival veneer	Acrylic base prosthetic veneer.	159	29.4
	Silicon-based prosthetic veneer.	127	23.5
	I did not hear about gingival veneer	254	47.0
Aware of different surgical approaches to treat advanced gingival recession	Yes	347	64.3
	No	121	22.4
	Do not know	72	13.3
Recall the patient for a follow-up visit after the treatment of advanced gingival recession	Yes	355	65.7
	No	185	34.3
Rate the outcome for the treatment of advanced gingival recession	Success	226	41.9
	Failure	67	12.4
	I don't do treatment	247	45.7
Prefer to carry out extraction followed by implant placement rather than treating advanced gingival recession	Yes	120	22.2
	No	322	59.6
	Do not know	98	18.1

Table 4 shows that 53.9% of participants were aware of protocol or guidelines when treating or referring patients with gingival recession. 67.2% reported that, according to Miller classification Class I and II can achieve 100% success with surgical root coverage. 90.5% reported that treatment

of an advanced gingival recession in dental clinics needs more awareness and care. 46.3% of participants are satisfied with the information about the treatment of an advanced gingival recession.

Table 4. Awareness of participants of gingival recession (n=540)

Parameter	No.	%	
Aware of any protocol or guidelines when treating or referring patients with gingival recession	Yes	291	53.9
	No	249	46.1
According to Miller's classification, which of the following classes can achieve 100% success with surgical root coverage	Class I and Class II	363	67.2
	Class III	35	6.5
	Class IV	36	6.7

	Don't know	106	19.6
Treatment of an advanced gingival recession in dental clinics needs more awareness and care	YES	489	90.5
	NO	27	5.0
	I don't know	24	4.5
Satisfaction with information about treatment of an advanced gingival recession	Yes	250	46.3
	No	242	44.8
	I Don't Know	48	8.9

Receding gums are a problem for practitioners because of the many possible causes and therapy options, and they are a concerning trend in periodontics. The treating, recommending, and periodontist dentists' professional judgments alone determine whether gingival recession should be treated [9]. This observational cross-sectional descriptive study aims to assess knowledge of treatment options for advanced gingival recession and to assess the satisfaction of healthcare workers in dental with treatment options for an advanced gingival recession.

Because the cause of gingival recession is multifactorial, it may occur in people who maintain both high and poor levels of oral hygiene [10]. Numerous studies have examined the views of patients regarding their awareness of gingival recession and the factors that contribute to this condition. It is frequently overlooked and barely addressed in periodontal literature [11]. Gingival recessions are caused by a variety of causes, including periodontitis, trauma from occlusion, calculus buildup, traumatic teeth brushing, and calculus deposition [9]. Because root surfaces are exposed as people age, the prevalence of root caries will rise proportionately. Mandibular premolars, canines, and incisors, as well as mandibular molars, are the teeth that are most frequently impacted [10]. The incidence of mucogingival defects, such as apical migration, is very high and rises in the elderly population. According to our study results, the most common cause of advanced gingival recession was 40.2% periodontal disease, 5.2% traumatic deep bite, 5% trauma from removable appliance or restoration, 1.5% high frenal attachment, and 46.7% reported all causes. In a previous study, 46.15% of the periodontists and 53.8% of the non-periodontists opted for the option of improper tooth brushing [12]. These results also coincide with that of the survey conducted by Zaher *et al.* in 2005 [13]. In a Saudi study, the majority of participants believed that periodontal disease 28.14 percent, inappropriate tooth position 16.58 percent, and high frenal attachment (five percent were the most prevalent causes of gingival recession. Improper teeth brushing 42.71 percent was cited by others as the most common reason [14]. This outcome was in line with previous research by Zaher *et al.*, [13]. A significant contributing factor to gingival recession, according to 28.14% of participants and 16.58% of participants, was periodontal disease. The high frenal attachment has been linked to gingival recession, according to Stoner and Mazdyasna [15], whereas Powell and McEniery [16] discovered no connection.

Despite the literature review search suggesting that aesthetics and dentinal hypersensitivity are the two main indications for root coverage procedures, in our study, 77.8% of participants reported dentine hypersensitivity, 56.7% aesthetic causes, and 15% food impaction. In a previous study, only 24% of periodontists and 76% of non-periodontists chose this choice [17]. Additionally, 58.8% of periodontists chose the main indication for root coverage procedures to be the halting of the gingival disease's further progression (43.6%) [12].

To prevent and control gingival recession in a population, it is important to have awareness of its prevalence. This awareness enables health centers to plan appropriately based on data on the severity and prevalence of these lesions, allowing them to launch an appropriate and effective preventive program that may slow or stop gingival recession's onset or progression as well as prevent the complex local disturbances that may arise [18]. Miller offered a classification of recession in 1985 based on the connection between the alveolar bone beneath and the gingival margin level and mucogingival junction (MGJ) [19]. Miller categorized the downturn as Class I: There is no MGJ involvement in the marginal tissue retraction. No soft tissue or interdental bone loss. Class II: Marginal decline that reaches the MGJ or beyond. No soft tissue or interdental bone loss. Class III: The MGJ or beyond is reached by marginal tissue retraction. Apical to the cementoamel junction (CEJ), but coronal to the apical limit of the marginal tissue recession, is where interdental bone or soft tissue loss occurs. Class IV: The MGJ or beyond is reached by the marginal tissue retraction. The breadth of the marginal tissue recession is apical to the level of interdental bone loss. In the current study, 62% of participants follow the Miller classification to record gingival recession, 8.1% follow the Cairo classification, and 3.7% use other classifications. In a previous Saudi study, Miller's classification of gingival recession was known to 34.17% of the participants, while 25.50%, 27.26%, and 13.07% of the participants were unaware of the classification and another recession classification, respectively [14]. The literature does, however, contain a variety of categorization schemes for gingival recession.

The association between the occurrence of gingival recession and age is most likely due to a longer duration of exposure to the agents that cause gingival recession, which is linked to intrinsic changes in the organism, both local and

systemic, aside from the cumulative effects of the lesion itself [18]. Based on the findings of the studies, it is more probable that many dentists may neglect these perioplastic procedures in their regular practice because of a lack of knowledge, awareness, and professional incompetence [12]. In our study, 38.5% of participants reported that the most affected age group with gingival recession in practice is 51-60 years old.

Treatment for gingival recession must follow a precise plan. For surgical root coverage, several improvements, modifications, and variations have been made, such as bilaminar connective tissue grafting methods and the creation of tunnels beneath areas of gingival recession to receive connective tissue grafts, avoiding the need to dissect the intermediate papilla and enhancing blood flow to the flap. For providing root coverage (RC), acquiring keratinized tissue gain, and obtaining predictable therapy results, the connective tissue graft (CTG) with coronally advanced flap (CAF) technique is regarded as the gold standard. However, this method has several drawbacks, including thin donor tissue, longer surgical times, increased risk from the presence of a second surgical site, a palatal neurovascular bundle close to the premolar-molar region, and a limited graft size from the donor site with multiple defects or large recession areas. Additionally, postoperative bleeding has become more intense, and there have been reports of pain. As a result, different techniques have been employed to treat gingival recessions [20]. In this study, 53.9% of participants were aware of protocol or guidelines when treating or referring patients with gingival recession. 46.3% of participants are satisfied with the information about the treatment of an advanced gingival recession. In a Saudi study, participants' median level of periodontal interest was 5.39, and their median level of happiness with managing periodontal cases was 5.47. Although there was no statistically significant difference between the groups, the participants with 11 to 15 years of expertise expressed a greater interest in periodontics and satisfaction in treating periodontal cases than the other groups [14].

Conclusion

Compared to international figures, Saudi dentists had moderate knowledge of advanced gingival recession management. To provide timely specialized intervention, there is an increased need to raise knowledge among dental professionals about the potential scope of periodontics. To remain current on the most recent research findings and cutting-edge treatment modalities and to give patients the best possible care, dental professionals should enroll in continuing education courses through certificate or specialty teaching programs.

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Ethics statement: Written informed consent was obtained from all individual participants included in the study.

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