Specialist Periodontal Referral Knowledge, Attitude and Practice by General Dental Practitioner in Nepal

Rijal AH,[1] Humagain M,[1] Lamichhane S,[1] Ghimire P[2]

[1]Department of Periodontology and Oral Implantology,

Kathmandu University School of Medical Sciences,

Dhulikhel, Kavre, Nepal.

[2]Dental Department, Methinkot Hospital,

Kavre, Nepal.

Corresponding Author

Arjun Hari Rijal

Department of Periodontology and Oral Implantology,

Kathmandu University School of Medical Sciences,

Dhulikhel, Kavre, Nepal.

E-mail: rajrijal27@gmail.com

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ABSTRACT

Background

To enhance the referral process, it is essential for the patient, referring practitioner, and specialist to establish effective communication and ensure they are well-informed and educated about each other's requirements.

Objective

To assess the knowledge and attitude of general dental practitioners towards specialist periodontal referral.

Method

This cross-sectional study was carried out for 6 months from October 2022 to April 2023 using a self-administered questionnaire by general dental practitioners registered in Nepal Medical Council. Knowledge and attitude about periodontics, various diseases and referral to specialist for special treatment were analyzed.

Result

Total of 238 General Dental Practitioners (GDPs) participated in this web-based questionnaire survey. Majority of general dental practitioners (GDPs) reported that they always performed full-mouth and subgingival scaling (193, 81.09%), providing advice on proper brushing techniques (205, 86.13%), advising patients to stop harmful habits (212, 89.07%), and offering diet counseling (122, 51.26%) for patients displaying signs of gingival or periodontal diseases. Majority of GDPs also indicated that they occasionally consult a periodontist for specific periodontal problems, such as the presence of periodontal pockets (143, 60.084%), mobile teeth (150, 63.025%), gingival enlargement (145, 60.924%), periodontal abscess (146, 61.344%), and gingival recession (149, 62.605%).

Conclusion

General dental practitioners play a crucial role as the primary point of contact for patients seeking dental treatment. The periodontal health of the general population largely depends on the knowledge, attitude, and practice of GDPs.

KEY WORDS

General dental practitioner, Periodontal referral, Periodontist

INTRODUCTION

Healthy periodontal tissues are essential for overall dental health. Hence, identifying and treating periodontal disease plays a crucial role in overall general dental practice.[1] Contrary to the expected increase in demand for periodontal services as the population ages, there appears to be a decline in the number of referrals made to periodontists.[2] The curriculum for undergraduates being limited, the general dental practitioner may not be able to completely treat periodontal diseases as desired and they need to be guided about when to refer a patient to the Periodontist so as to treat it from its roots.[3,4]

In order to enhance the referral process, effective communication and mutual understanding of each other's requirements are essential responsibilities for the patient, referrer, and specialist involved.[5-7]

For patients with periodontal disease, it is the responsibility of the general dentist to determine the appropriate course of action, whether to provide treatment or refer to a specialist. This decision plays a crucial role in effectively managing progressive bone and attachment loss in the long term. To make an informed decision, the dentist must take into account factors related to the patient, factors related to the dentist, and the comprehensive array of available periodontal treatment options.[8] So, the objective of the present study is to assess the knowledge and attitude of general dental practitioners towards specialist periodontal referral among Nepalese dentist.

METHODS

A descriptive cross-sectional web-based questionnaire study was conducted between October 2022 and April 2023 on dental surgeons registered with the NMC (Nepal Medical Council) after obtaining ethical approval from the Institutional Review Committee (IRC) of Kathmandu University School of Medical Sciences (IRC reference no: [198/22]). The sample size was calculated using data from a study by Shrestha et al.[9] Considering a confidence level of 95%, p-value of 0.5, error of 0.05, population size of 601, alpha divided by 2 of 0.025, and Z-value of 1.96, resulting sample size was calculated to be 238. Convenience sampling was used to collect data, and informed consent was obtained from participants beforehand. The first page of the online survey provided all the necessary information about the researcher and the study, and participants could give their consent by clicking the 'yes' option. Participants had the right to choose not to participate by clicking 'no,' and their identities were kept confidential.

The study included currently practicing dental surgeons in private dental clinics and private dental hospitals, excluding periodontists, postgraduate students in periodontics, dental surgeons working in medical and dental colleges, government hospitals, and unwilling participants. An online-based questionnaire was adapted from previously published articles and consent was obtained from the respective authors via email.[10,11] Google Form (Alphabet Inc., USA) was used to prepare the questionnaire, which comprised of well-structured, self-administered, web-based questions with both closed and open-ended formats, including single and multiple-choice options. All questions were mandatory and required participants to provide responses. The questionnaire was divided into three parts, covering knowledge, attitude, and the current practical aspect of general dental practitioners.

Each candidate was provided with a brief introduction to the study and asked to complete the self-administered questionnaire. Once all the information was collected in the Google Forms platform, the data were transferred to a Microsoft Excel sheet for analysis. Descriptive data were presented using frequency, percentage, mean, and standard deviation, supported by tables and figures.

RESULTS

A total of 238 participants actively completed and submitted the google form, which aligned with the primary objective of the study and were consequently included in the subsequent analysis. Notably, the present study exhibited a higher representation of female participants, with 155 individuals, accounting for 65.1% of the total sample. Comprehensive demographic data encompassing age, gender, current practice address, working sector, years of experience, and year of graduation have been meticulously outlined in table 1. It is noteworthy that a substantial proportion of participants, specifically 164 (68.90) individuals fell within the age group of 26-30 years. Furthermore, the study also observed the majority of participants, 124 (52.10) individuals, were from Bagmati Pradesh whereas a smaller proportion, merely 5 (2.10) participants were from Sudurpaschim Pradesh. In terms of professional experience, the majority of participants reported having 2 years of practical experience, predominantly in the realm of private dental clinics that were either owned by others or self-operated. A noteworthy finding regarding the participants' graduation years revealed that a substantial portion, precisely 169 (71.00) individuals, had graduated between the 2021 and 2022 (Table 1).

Participants were asked whether they perform basic periodontal examination during regular dental practice or not. Majority of them mentioned that they always examine for bleeding on probing, tooth mobility and gingival enlargement. Most of the participants sometimes check pocket depth, furcation involvement, mucogingival defects and trauma from occlusion. There were very few participants who never perform basic periodontal examination. On asking how frequently they perform scaling and root planning to treat bleeding gums, about 189

Table 1. **Demographic data of participants involved in the study.**

Demographic Variables		n (%)
Age	20-25	31 (13.025)
	26-30	164 (68.907)
	31-35	33 (13.865)
	>35	10 (4.201)
Gender	Male	155 (65.1)
	Female	83 (34.9)
Practice address	Province number 1	36 (15.1)
	Province number 2	11 (4.6)
	Bagmati Pradesh	124 (52.1)
	Gandaki Pradesh	22 (9.2)
	Province number 5	33 (13.9)
	Karnali Pradesh	7 (2.9)
	Sudurpaschim Pradesh	5 (2.1)
Work Sector	Self- employed in own clinic	76 (31.9)
	Employed in a private clinic	111 (46.6)
	Employed in a private hospital	51 (21.4)
Year of experience	<1 year	65 (27.3)
	2 years	64 (26.9)
	3 year	41 (17.2)
	4 year	14 (5.9)
	5 year	11 (4.6)
	>5 year	43 (8.1)
Years of graduation	Before 2000	2 (0.8)
	2000-2010	5(2.1)
	2011-2020	62 (26.1)
	2021-2022	169 (71)
Membership of any professional organization	Nepal Dental Association	138 (58)
	Nepal Medical Association	26 (10.9)
	Member of different dental societies	37 (15.5)
	Others	27 (11.7)

(79.4) participants responded positively. More than two third of participants refer patient after phase – I therapy and to treat bleeding to a periodontist. More than two third of the participants think loss of attachment as main causative factor for mobility (Fig. 1). Most of the dentists sometimes perform following procedures to treat mobility in their clinical setup: scaling/root planning, splinting, root canal therapy and splinting, occlusal adjustments, extraction and refer to periodontist. Regarding surgical procedures, majority of dentists perform gingivectomy by themselves while other periodontal surgical procedures like frenectomy, vestibuloplasty, crown lengthening, flap surgery, free gingival autograft, ridge augmentation, were never performed independently in their clinical setup (Table 2).

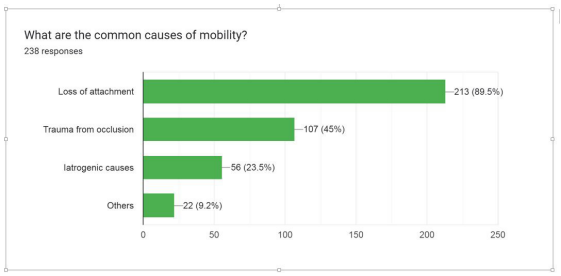

Figure 1. **Markings of peak of cupid's bow (cphi) and origin of philtral column (cphs)**

Table 2. **Knowledge of participants regarding periodontal health, disease, treatment and referral.**

Questions	Response n (%)		
	Never	Sometimes	Always
Do you check the following as a part of the regular examination in your patient?			
Bleeding on probing	4 (1.68)	96 (40.33)	138 (57.98)
Probing pocket depth	4 (1.68)	153 (64.28)	81 (34.03)
Tooth mobility	-	52 (21.84)	186 (78.15)
Furcation involvement	7 (2.94)	133 (55.88)	98 (41.17)
Mucogingival defects	19 (7.98)	147 (61.17)	72 (30.25)
Gingival enlargement	2 (0.84)	63 (26.47)	173 (72.68)
Trauma from occlusion	9 (3.78)	139 (58.40)	90 (37.81)
Do you perform scaling/root planning to treat bleeding gums?		49 (20.6)	189 (79.4)
Do you refer your patients to a periodontist for phase-I therapy?	49 (20.60)	167 (70.2)	22 (9.2)
Do you refer your patients to a periodontist to treat bleeding gums?	72 (30.30)	147 (61.8)	19 (8)
Do you investigate the underlying cause to treat bleeding gums?	5 (2.10)	116 (48.7)	117 (49.2)
Do you ask the patient to maintain oral hygiene to treat bleeding gums?	1 (0.40)	3 (1.3)	234 (98.3)
Do you examine further for periodontal pockets to treat bleeding gums?	10 (4.20)	107 (45)	121 (50.8)
How do you treat the cases with mobility in your clinical setup?			
SRP and Observe	9 (3.78)	103 (43.27)	126 (52.94)
Splinting	38 (15.96)	185 (77.73)	15 (6.30)
RCT and splinting	49 (20.58)	178 (74.78)	11 (4.62)
Occlusal adjustments	18 (7.56)	184 (77.31)	36 (15.12)
Extraction	26 (10.92)	200 (85.03)	12 (5.04)
Refer to a periodontist	12 (5.042)	180 (75.63)	46 (19.32)
Which are the surgical procedures that you perform in your clinic?			
Gingivectomy	94 (39.49)	137 (57.56)	7 (2.94)
Frenectomy/Vestibuloplasty	142(59.66)	87 (36.55)	9 (3.78)
Crown Lengthening	124(52.10)	106 (44.53)	8 (3.36)
Flap Surgery	191(80.25)	44 (18.48)	3 (1.26)
Free Gingival Autograft	219(92.01)	17 (7.14)	2 (0.84)
Ridge Augmentation	213(89.49)	13 (5.46)	3 (1.26)
Others (Please Specify)	197(82.77)	36 (15.12)	5 (2.1)

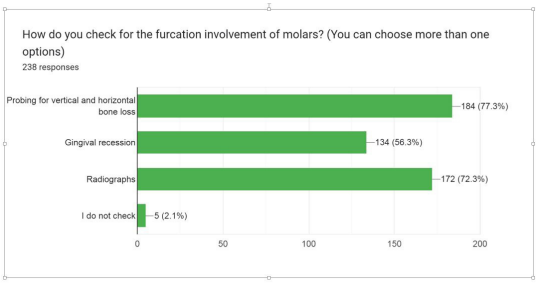

Figure 2. Knowledge of the participants regarding the furcation of molars.

Seven questions were asked to find out the attitude of general dental practitioner towards periodontal treatment and specialist referral. Participants were asked whether specialist periodontal referral is necessary or not to which 100% practitioners believed referral is must. About 230 (96.6) practitioners think recalling patients for maintenance therapy is necessary and more than half of the participants recall their patients within one month for the maintenance. Similarly, more than two thirds felt need for periodontal retreatment and according to them recurrence of periodontal diseases is due to patient factors 233 (97.9), operator factors 96 (40.3) and general dentist factors 115 (48.3) (Table 3). Upon asking about the results of periodontal treatment, most of the participants thought reduction in mobility 204 (85.7), stoppage of bleeding 200 (80), elimination of pocket 192 (80.7) and increased life span of teeth 192 (80.7) are the most common outcomes after periodontal treatment (Table 3).

Among 238 general dental practitioners, 125 (52.5) spend 6-8 hours, 47 (19.7) spend more than 8 hours and 19 (8) spend 2-4 hours in their clinic for practice (Table 4). Similarly, majority of practitioners 93 (39.1) examine their patients in less than 10 minutes timeframe (Table 4). In private clinical setup, more than two thirds of practitioner always perform full mouth scaling, subgingival scaling, advice proper brushing techniques and cessation of harmful habits. Similarly, 121 (50.84) participants sometimes perform splinting for patients showing the sign of gingival or periodontal diseases and treat cases with furcation involvement. About 48% of participants always/sometimes refer patients to a periodontist for surgical procedures and frequency of referral is occasionally 161 (67.6), once a week 30 (12.6), twice a week 21 (8.8), once a month 26 (10.9). More than 50% of responder sometimes consult a periodontist for bleeding gums, presence of periodontal pockets, mobile teeth, gingival enlargement, periodontal abscess, gingival recession and other mucogingival problems (Table 5). According to most of the general dental practitioners, periodontist sometimes perform periodontal surgical procedures like flap surgery, gingivectomy/ gingivoplasty, bone grafting/guided tissue regeneration, crown lengthening, root coverage procedures, implants. Most commonly performed procedures are gingivectomy/ gingivoplasty and frenectomy (Table 5).

Table 3. Attitude of participants regarding periodontal health, disease, treatment and referral

Questions	Particular	Response
Do you think a referral to a periodontist is necessary?	Yes	236(99.2)
	No	2 (0.8)
If no,	Carry out surgical procedures yourself	1 (8.3)
	Not satisfied with the results of periodontal surgical treatment	0(0)
	Have very few patients of periodontal disease who get motivated for periodontal surgery	11 (91.7)
Do you recall your patients for maintenance therapy after the periodontal treatment?	Yes	230(96.6)
	No	8 (3.4)
If YES: Recall after:	1 month	129(54.2)
	3 months	80 (33.6)
	6 months	17 (7.1)
	In case of recurrence	12 (5)
What is your opinion about the success of periodontal therapy?	Successful	224(94.1)
	Unsuccessful	14 (5.9)
Did the need for periodontal re-treatment arise in your practice?	Yes	182(76.5)
	No	56 (23.5)
If yes, then how often have you retreated patients with periodontal diseases after therapy?	In all cases	4 (2.1)
	Few cases	171 (90)
	No	
What do you think are the factors responsible for the recurrence of periodontal disease after the treatment? (You can choose more than one options)	Patient factors (Lack of maintenance and awareness)	233(97.9)
	Operator factors (Inadequate preparation before surgery, lack of skill, and time)	96 (40.3)
	General dentist factors (Lack of knowledge, skill, chair-side time, motivation, awareness)	115(48.3)
What is your opinion about the results of periodontal treatment? (You can choose more than one options)	Stoppage of bleeding	200 (80)
	Elimination of pocket	192(80.7)
	Reduction in mobility	204(85.7)
	The increased life span of teeth	192(80.7)
	Root coverage	118(49.6)
	Recurrence	46 (19.6)
What is your opinion about the cost-effectiveness of the periodontal treatment? (You can choose more than one options)	Beneficial to all concerned	175(73.5)
	Too costly for the patients	50 (21)
	Value for money	69 (29)

Table 4. Practice of participants regarding clinical work duration and time required for clinical examination.

Questions	Particulars	Response
How many hours a day do you spend in your clinic?	2-4 hours	19 (8)
	4-6 hours	47 (19.7)
	6-8 hours	125 (52.5)
	More than 8 hours	47 (19.7)
How much time do you take for a patient examination?	Less than 10 minutes	93 (39.1)
	10 minutes	87 (36.6)
	15 minutes	42 (17.6)
	More than 15 minutes	16 (6.7)

Table 5. Practice of participants regarding periodontal health, disease, treatment and referral.

Questions	Response n (%)		
	Never	Sometimes	Always
How often do you perform the following procedures?			
Full-mouth scaling for patients showing signs of gingival or periodontal diseases	2 (0.84)	43 (18.06)	193 (81.09)
Subgingival scaling for patients showing signs of gingival or periodontal diseases	3 (1.26)	105 (44.11)	130 (54.62)
Advise proper brushing techniques for patients showing signs of gingival or periodontal diseases	5 (2.100)	28 (11.76)	205 (86.13)
Advise the stoppage for harmful habits for patients showing signs of gingival or periodontal diseases	5 (2.100)	21 (8.82)	212 (89.07)
Advise diet counseling for patients showing signs of gingival or periodontal diseases	14 (5.88)	102 (42.85)	122 (51.26)
Perform splinting for patients showing signs of gingival or periodontal diseases	61 (25.63)	164 (68.90)	13 (5.46)
Treat cases with furcation involvement	107 (44.95)	121 (50.84)	10 (4.20)
Refer patients to a periodontist for surgical procedures	10 (4.20)	116 (48.73)	112 (47.05)
	Particulars	**n (%)**	
If YES to 8, How frequently do you call a periodontist for consultation or refer patients to a periodontist for surgical procedures?	Once a week	30 (12.60)	
	Twice a week	21 (8.80)	
	Once a month	26 (10.90)	
	Occasionally	161 (67.60)	
Do you consult a periodontist for the following signs and symptoms?			
Bleeding gums	117(49.159)	119 (50)	12 (5.042)
Presence of Periodontal pockets	65 (27.310)	143(60.084)	30 (12.605)
Mobile teeth	55 (23.109)	150(63.025)	33 (13.865)
Gingival enlargement	26 (10.924)	145(60.924)	67 (28.151)
Periodontal Abscess	49 (20.588)	146(61.344)	43 (18.067)
Gingival Recession	32 (13.445)	149(62.605)	57 (23.949)
Other Mucogingival problems	13 (5.462)	127(53.361)	98 (41.176)
How often the periodontist performs the following procedures in your clinic?			
Flap Surgery	82(34.453)	134(56.302)	16 (6.722)
Gingivectomy/Gingivoplasty	63(26.470)	149(62.605)	21 (8.8230
Bone grafting/GTR	110(46.218)	105 (4.411)	17 (7.142)
Crown lengthening	77 (32.352)	137(57.563)	18 (7.563)
Frenectomy/ Vestibuloplasty	72 (27.906)	144(60.504)	17 (7.142)
Root coverage procedures	100(42.016)	115(48.319)	15 (6.302)
Implants	85 (35.714)	123(51.680)	23 (9.633)

DISCUSSION

Majority of adults experience mild to moderate forms of periodontitis at some point in their lives. The prevalence of this condition is higher among the elderly demographic. Recent data suggests that approximately 10.8% of the adult population worldwide is affected by some form of periodontitis.[12,13] However, the situation in Nepal is quite different, with a prevalence rate of 47.5%.[14,15] The higher prevalence of periodontitis in Nepal can be attributed to various factors such as inadequate knowledge regarding proper oral hygiene practices, poor economic status, limited awareness of the importance of oral health, and a lack of accessible oral healthcare facilities and personnel in their region. If left undiagnosed and untreated in its early stages, the prevalence of periodontitis may continue to rise in Nepal.

General dental practitioners (GDPs) are usually the first healthcare professionals to encounter patients with various forms of gingival and periodontal diseases. The knowledge, attitude, and practices of GDPs regarding the diagnosis and management of these conditions have a significant impact on their prevalence and severity. Several studies have been conducted in the past to assess the knowledge, attitude, and practices of GDPs in relation to the diagnosis, management, and referral patterns of gingival and periodontal diseases.[16,17] The referral of patients to a periodontist is influenced by a range of clinical and non-clinical factors. Clinical factors include the extent, severity, and prognosis of the gingival and periodontal diseases, as well as complex medical histories of the patients.[18,19] Nonclinical factors encompass limited undergraduate training, continuing dental education programs, lack of knowledge, etc.[18-20]

In this study, the initial assessment focused on the knowledge of general dental practitioners (GDPs) regarding basic periodontal examination. The majority of participants reported always examining bleeding on probing 138 (57.98), tooth mobility 178 (78.15), and gingival enlargement 173 (72.68) in their routine clinical practice. Additionally, they sometimes examined pocket probing depth 153 (64.28), furcation involvement 133 (55.88), mucogingival defects 147 (61.17), and trauma from occlusion 139 (58.40). Only a few GDPs did not consider periodontal examination as part of their routine clinical practice. These findings align with a similar study conducted by Smitha et al.[21] Majority of participants 189 (79.40) in this study reported performing scaling and root planning to treat bleeding gums, which is consistent with previously published literature.[18,21-23] The participants were also asked about various aspects of gingival bleeding. Most of the GDPs sometimes investigate the causes of gum bleeding 116 (48.70), refer patients to a periodontist for treatment 147 (61.80), and always advise patients to maintain oral hygiene to address bleeding gums 234 (98.30). These results are consistent with the anticipated findings of other studies.[10] Regarding nonsurgical procedures, majority of GDPs performed these procedures themselves and did not call or refer patients to a periodontist, which has also been observed in previous studies.[11,22,24,25]

In terms of surgical procedures, majority of the participants reported occasionally performing minor periodontal surgical procedures, such as gingivectomy 137 (57.56). However, most GDPs indicated that they never perform other periodontal surgical procedures, including frenectomy/vestibuloplasty, crown lengthening, flap surgery, free gingival autograft, and ridge augmentation. These findings are similar with other studies.[3,10,17,25] The reasons behind this trend could be attributed to a lack of exposure during undergraduate training, insufficient confidence, and limited knowledge to perform such types of periodontal surgeries.

The participants' attitude towards periodontal health, disease, treatment, and referral were assessed using a structured questionnaire consisting of seven items. Nearly all participants (almost 100%) acknowledged the necessity of periodontal referral in routine clinical practice. This finding is consistent with previous research.[10,18,25] The majority of GDPs 182 (76.5) scheduled patient recalls after periodontal therapy for evaluation. Moreover, a significant number of GDPs 182 (76.5) recognized the need for periodontal re-treatment in their routine practice and proceeded to retreat patients with periodontal diseases after therapy. These findings align with previously published articles.[10,25] Regarding the factors contributing to the recurrence of periodontal disease, most participants believed that patient-related factors such as lack of maintenance and awareness played a significant role. Additionally, 115 participants (48.3) attributed the failure or recurrence of periodontal disease after therapy to general dentist factors, including a lack of knowledge, skill, chair-side time, motivation, and awareness. Few GDPs also identified operator factors, such as inadequate preparation before surgery, lack of skill, and time, as potential causes of recurrence. Similar results were reported in a study conducted by Priya et al.[10] The majority of participants in this study believed that the cessation of bleeding, elimination of pockets, reduction in tooth mobility, and increased longevity of teeth were the desirable outcomes of periodontal therapy.

In this study, the majority of general dental practitioners (GDPs) reported always performing full-mouth and subgingival scaling 193 (81.09), providing advice on proper brushing techniques 205 (86.13), advising patients to stop harmful habits 212 (89.07), and offering diet counseling 122 (51.26) for patients displaying signs of gingival or periodontal diseases. Similarly, they sometimes performed splinting for patients with these conditions (164, 68.90%). These findings align with the information reported in previous literature.[10,11] If GDPs were unable to perform these procedures, they would typically refer the patients to a specialist periodontist.

Specialist periodontal referral is influenced by various factors, which can impact the referral process.[17] These factors include: complex medical history, previous treatment by a periodontist inability to motivate patient to improve oral hygiene, patient's awareness of periodontal disease, patient's reluctance to undergo periodontal treatment, fees charged by the periodontist, loss of income to the practice if referred, time constraints in the general dental practice, repeated refusal of referral by the patient, lack of training to treat periodontal disease, administrative factors.

Dentist-related factors include lack of knowledge, confidence, and exposure among general dental practitioners, as well as limited access to continuing dental education.[1,17,20,25] Periodontist-related factors encompass the age, ethnicity, and sex of the periodontist, as well as the ease of communication for questions or treatment planning, patient feedback, association with a university or research institution, provision of educational events, fee structure, quality of reports, and clinic location.[17]

In this study, the majority of GDPs indicated that they occasionally consult a periodontist for specific periodontal problems, such as the presence of periodontal pockets 143 (60.084), mobile teeth 150 (63.025), gingival enlargement 145 (60.924), periodontal abscess 146 (61.344), and gingival recession 149 (62.605). Common procedures performed by periodontists in GDPs' clinics included gingivectomy/gingivoplasty 149 (62.605), frenectomy/vestibuloplasty 144 (60.504), crown lengthening 137 (57.563), and flap surgery 134 (56.302). These findings align with previously reported articles.[10,11,22,24]

CONCLUSION

General dental practitioners play a crucial role as the primary point of contact for patients seeking dental treatment. They are responsible for the early diagnosis and treatment of various periodontal problems to prevent their progression to more severe forms. The periodontal health of the general population largely depends on the knowledge, attitude, and practice of GDPs. To enhance the specialist periodontal referral process, the following points should be emphasized:

1. Timely updates in the undergraduate syllabus: The undergraduate dental curriculum should incorporate skill-based periodontal treatment procedures to ensure that GDPs receive comprehensive training in managing periodontal diseases.

2. Specialized courses in periodontology for GDPs: Offering specialized courses in periodontology would provide GDPs with advanced training and expertise in the field, enabling them to handle complex periodontal cases.

3. Access to continuing dental education programs: Providing opportunities for GDPs to participate in continuing dental education programs would help them stay updated with the latest concepts and advancements in periodontal disease management.

4. Increased availability of periodontists: Ensuring that periodontists are accessible in every region of the country to facilitate easy referral and collaboration between GDPs and specialists when required.

5. Patient awareness about oral hygiene practices: Promoting awareness among patients about the importance of maintaining good oral hygiene practices can contribute to preventing and managing periodontal diseases effectively.

By implementing these measures, the knowledge and skills of GDPs in periodontal care can be enhanced, leading to improved specialist periodontal referral processes and better overall periodontal health outcomes for the general population.

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Disclosure

The preprint version of this research has been published in the Research Square.[26]

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