



# The referral pattern of patients to periodontists by general dentists

O padrão de encaminhamento de pacientes para periodontistas por clínicos gerais

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## ABSTRACT

**Objective:** The successful periodontal therapy needs a proper relationship between general dentist and periodontist. The aim of this study was to determine the referral pattern of patients to periodontists by general dentists in Yazd, Iran, by means of a questionnaire. **Material and Methods:** This descriptive cross-sectional study was carried out in the form of a survey among 145 licensed general dental practitioners in Yazd, Iran. A questionnaire comprising of seven questions with sub-questions was prepared. **Results:** 89% of dentists have referred patient to periodontist. Gingival recession was the most frequent reason for referring (69.7%) and the least was gingival bleeding (13.1%). The most frequent surgical procedure for what patients have been referred were peri-implantitis therapy and ridge augmentation. Referral status to periodontist for female dentists was 95.9% and for male dentists was 81.7%. The number of referred patients from the dentists who were practicing simultaneously at both private and public clinics was higher than those who were practicing only at private or public clinics. The most referral percentage was in the group of dentists with less than 5 years of experience with a slight difference from those with more than 10 years of experience. Only 26.1% of the respondents have participated in retraining programs. **Conclusion:** There is a need for general dentists to consider the primary signs of periodontal disease and necessity of referring the patients in early stages more serious, to provide an optimal long-term outcome for patients.

## KEYWORDS

Dentist; Periodontal disease; Referral.

## RESUMO

**Objetivo:** O sucesso da terapia periodontal requer um relacionamento adequado entre o clínico geral e o periodontista. O objetivo deste estudo foi determinar, por meio de um questionário, o padrão de encaminhamento de pacientes por dentistas clínicos gerais a periodontistas em Yazd, Irã. **Material e Métodos:** Este estudo transversal descritivo foi realizado na forma de uma pesquisa incluindo 145 dentistas licenciados em Yazd. Foi elaborado um questionário composto por sete questões com subquestões. **Resultados:** 89% dos cirurgiões-dentistas encaminham o paciente ao periodontista. A recessão gengival foi o motivo mais frequente de encaminhamento (69,7%), enquanto o sangramento gengival foi o menos frequente (13,1%). Em termos de procedimentos cirúrgicos, os procedimentos mais frequentes para encaminhamentos foram terapias de periimplantite e aumento de rebordo. O encaminhamento realizado por dentistas do gênero feminino foi de 95,9% e pelo gênero masculino foi de 81,7%. O número de pacientes encaminhados por dentistas que atuavam simultaneamente em clínicas privadas e públicas foi maior do que aqueles que atuavam apenas em clínicas privadas ou públicas. O maior percentual de encaminhamento foi no grupo de cirurgiões-dentistas com menos de 5 anos de experiência, com ligeira diferença daqueles com mais de 10 anos de experiência. Apenas 26,1% dos entrevistados relataram ter participado de programas de reciclagem. **Conclusão:** É necessário que os dentistas gerais considerem os sinais primários da doença periodontal e encaminhem os pacientes mais graves em estágios iniciais para fornecer um resultado ideal a longo prazo para os pacientes.

## PALAVRAS-CHAVE

Dentista; Doença periodontal; Referência.

## INTRODUCTION

Periodontal diseases are among the most common oral and dental health care problems [1].

Gingivitis, the mildest form of periodontal disease, is caused by the bacterial biofilm (dental plaque) that accumulates on teeth adjacent to the gingiva (gums). However, gingivitis does not affect the underlying supporting structures of the teeth and is reversible. Periodontitis results in loss of connective tissue and bone support and is a major cause of tooth loss in adults [2].

The type of periodontal treatment depends on the diagnosis of each condition [1].

If gingivitis is diagnosed soon enough, it can be treated and reversed to normal in most cases [3].

Unfortunately, periodontitis does not show much symptoms unless it has reached advanced stages of destruction [4].

General dentists have a significant role in primary diagnosis and treatment of periodontal patients. They assess patient's periodontal status and either treat or refer them to periodontists [5,6]. Ideally referral process should be a smooth transfer of patient from one dentist to another. However, in reality it seems that this process is complicated by many factors. The referral process may influence treatment outcomes by affecting the timing of referral, acceptance of therapy by the patient, and other factors [7].

Studies have shown that some of the patients concerns with their referral include pain, costs of treatments, need for surgery, prolonged dental treatment and post-operative sensitivity [8].

The level of training received in dental schools is an important factor that influences a dentist's decision to diagnose and treat periodontal disease. Formal training received in dental school by the GDPs is largely focused on nonsurgical periodontal therapy [9].

Since the level of specialty education is limited for undergraduates. Therefore, dentists should know how to make timely and appropriate referrals to periodontists when required [1].

Mostly referring the patient to periodontist take place so late, when the disease is in advanced stages, on the other hand some patients were not referred by dentist at all and were not

informed about the importance of visiting a periodontist [10,11].

As it is clear the quality of treatment which patient receives should be the same whether administered by a specialist or a general dentist, therefore general dentists need to be well informed about the appropriate time of the patient's referral to periodontist [1].

Based on the lack of updated studies to assess the referral relationship among general dentists and periodontists, this study was undertaken to determine the referral pattern of patients to periodontists by general dentists in Yazd, Iran, by the means of questionnaire.

## MATERIAL AND METHODS

This descriptive cross-sectional study was carried out in the form of a survey among 145 licensed general dental practitioners who have been working at private offices or public dental clinics in Yazd, Iran. A questionnaire (Appendix 1) comprising of seven questions with sub-questions was prepared and distributed to each of them by visiting their workplace and collected on the next day. The questionnaires used by previous studies [1,4] were used as a starting point to form the current questionnaire. They were then adapted according to the prevailing Iranian conditions.

General dental practitioners in Yazd who were graduated from one of dental universities and were a member of Iranian dental society and also hold a dental practice license were included in this study and Oral and dental hygienists, dental prosthodontists and dental students were not included.

Participating in this study was voluntary and the consent form was signed by each participants. There was no need to mention names on questionnaire and it was explained to every participant that information remains confidential. Conduction of the study was approved by the search ethical committee of Yazd University of medical sciences by the code of IR.SSU.REC.1398.137 .

## Data analysis

Participants were chosen by the means of systematic random sampling. To evaluate the justifiability of the questions, questionnaires were

checked by 3 periodontists. According to the fact that the questionnaire was a checklist, there was no need to assess the validity. After the data were collected and encoded in to computer-readable forms. For each question, independent percentage was calculated to determine the frequency of the responses. The data were analyzed using SPSS (version 23) and Chi-squared test.

The significant level was %5 .

## RESULTS

This study was carried out among 145 licensed general dental practitioners who have been working at private offices or public dental clinics in Yazd, Iran. The mean age was  $35.13 \pm 8.9$  and 51% of them were female and 49% were male.

49 dentists (33.8%) have been working at private clinics, 61 dentists (42.1%) in clinics and 34 dentists (23.4%) at both. According to Table I, in general 89% of dentists have referred patient to periodontists and in average they referred 3 patients in a month.

Gingival recession was the most frequent reason for referring (69.7%) and the least was gingival bleeding (13.1%) (Figure 1). According to Figure 2, the most frequent surgical procedure for what patients have been referred were peri-implantitis therapy and ridge augmentation.

Referral status to periodontist in female dentists was 95.9% and in male dentists was 81.7% and Based on chi-square test this difference was statistically significant ( $P$ -value=0.006) (Table II).

The number of referred patients form dentists who were practicing simultaneously at both private and public clinics was higher than those who were practicing only at private or public clinics and based on the chi-square test this difference was statistically significant (Figure 3).

The most referral percentage was in the group of dentists with less than 5 years of

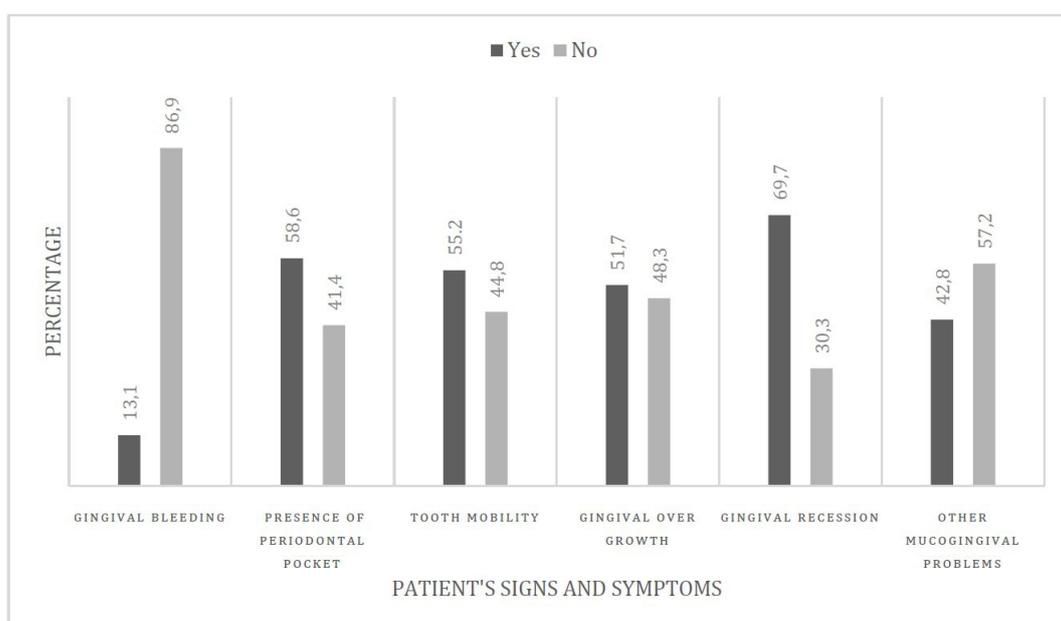
**Table I** - Frequency distribution of referral status and average number of referrals

Variable	Number (%)
Yes	129 (89%)
No	16 (11%)
Average referral numbers to periodontist in 1 month period of time	3.02 (3.32%)

**Table II** - Frequency distribution of referral status based on dentists' gender

Gender Referral status	Female	Male	Total
Yes	71 (95.9%)	58 (81.7%)	129 (89%)
No	3 (4.1%)	13 (18.3%)	16(11%)
Total	74(100%)	71 (100%)	145 (100%)

Chi-square. Significant level: 0.05.  $P$ -value: 0.006.



**Figure 1** - Frequency distribution of dentists' answers to the question about the signs and symptoms of the patient which consultation with periodontist.

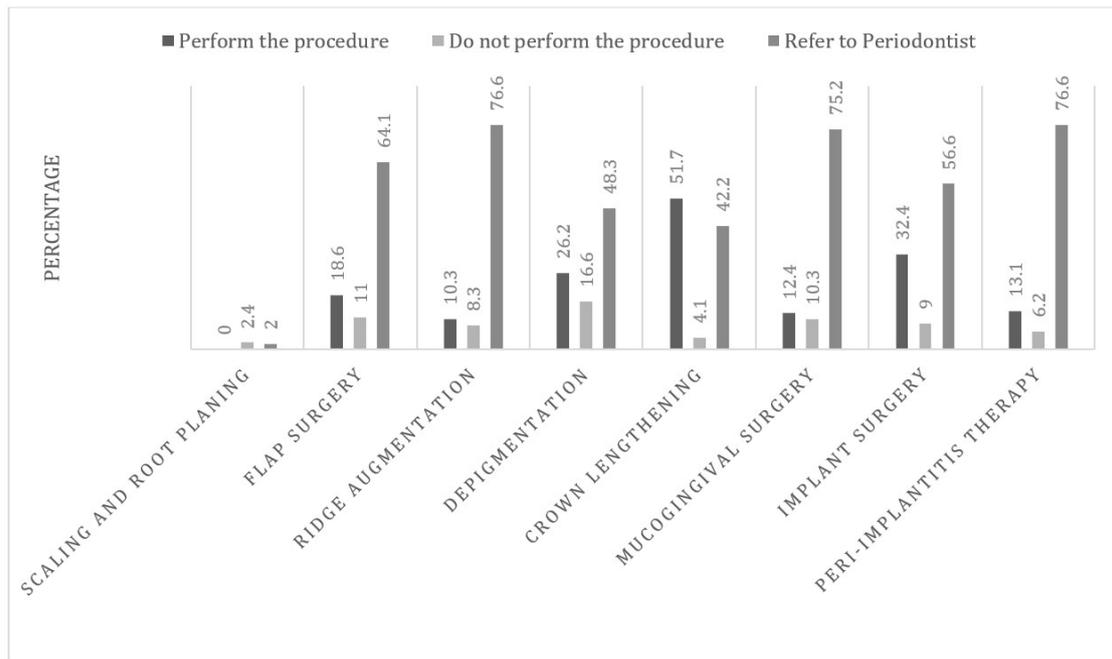


Figure 2 - Frequency distribution of dentists' decision making in various clinical scenarios.

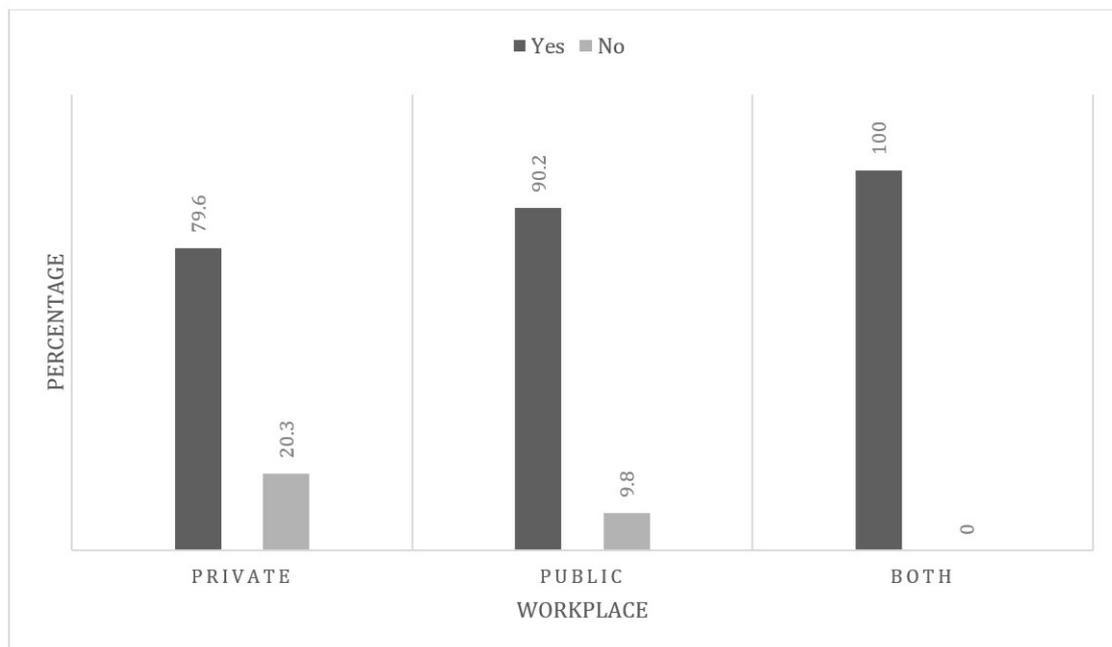


Figure 3 - Frequency distribution of referral status based on the private or public dental office/clinic. Chi-square; P-value: 0.013.

experience with a slight difference from the group of dentists with more than 10 years of experience. The least referral percentage was in the group of dentists with experience of 5-10 years and Based on chi-square test this was statistically significant (Table III).

Data analysis showed that only 26.1% of the respondents have been participating in retraining programs and the maximum retraining program participation were 2 per year in 12.9% of them and others (87.1%)

Table III - Frequency distribution of referral status based on years of practice

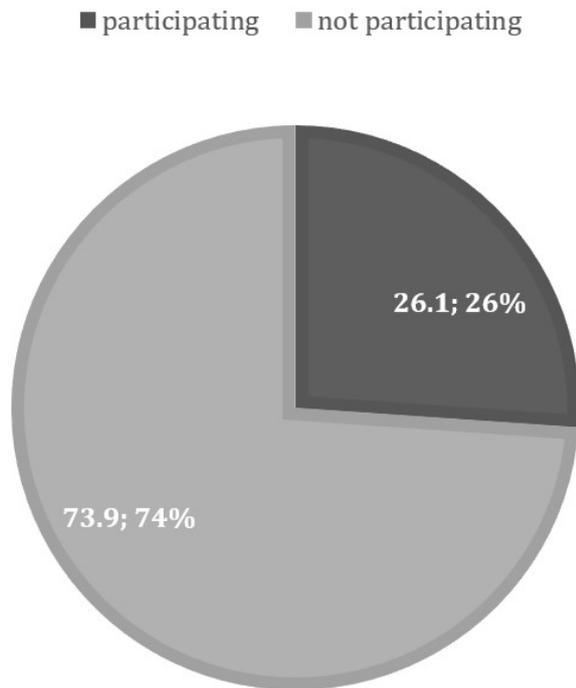
Years of practice Referral status	Less than 5 years	5-10 years	More than 10 years
Yes	48 (94.1%)	25 (74.3%)	54 (93.1%)
No	3 (5.9%)	9 (25.7%)	4 (6.9%)
Total	51 (100%)	35 (100%)	58 (100%)

Chi-square. P-value: 0.007.

have participated in only one program per year (Figure 4 & Table IV).

**Table IV** - Frequency distribution of the number of retraining programs dentists' have participated in

Number of programs respondents participated	Numbers	Percentage
1 program per year	27	87.1
2 programs per year	4	12.9
Total	31	100



**Figure 4** - Frequency distribution of dentists' practicing in retraining programs.

## DISCUSSION

In general results of this study showed that not only gender of the referring dentist, years of his/her practice, workplace such as a private or public office/clinic but also signs and symptoms of the periodontal disease of the patient and type of the treatment needed, may influence the referral pattern to periodontist.

The considerations concerning the number of periodontal referral in relation to gender of referring dentist showed a significant impact. In this study 95% of the female dentists made a periodontal referral comparing to 81% in male dentists. Previous studies from Zemanovich et al. [12] about the demographic variables affecting patient referrals from general practice (GP) dentists to periodontists determined gender related referrals. They reported that female GPs were shown to be more than two and a half

times likely to refer three or more patients per month than their male counterparts. Results from Cottrell et al. [13] showed that female dentists were more likely than their male counterparts to refer patients who required simple dentoalveolar surgery and dental implants. They stated that Clinician gender differences disappeared as the complexity of the surgery increased, with both genders reporting similar patterns of referral. Although these results confirm the result of current study, no study conducted within Iran has solely observed gender's effect on referral rates in dentistry. Future studies with more accurate variables need to determine whether females tend to refer more frequently.

Signs and symptoms of the patient which indicated consultation with periodontist is another major factor affecting the referral process. Result of our study have revealed that the most frequent sign is gingival recession (69%) followed by tooth mobility (55.5%) compared to gingival bleeding which is the least sign to be referred. In a study of similar pattern Cherian et al. [4], showed that majority of GPs referred their patients to a periodontist when teeth showed signs of mobility. And the study conducted by Sum and O'Rourke [14] The disease factor regarded as most important was unresolved inflammation upon re-evaluation. Findings of these studies are in agreement of the current study.

In such cases periodontal intervention would only give unpredictable results. The American Association of Periodontology guidelines were written to help dentists identify if and when a patient should be referred to a periodontist, which if followed would help to overcome the issues in the referral patterns. The general dentist should be aware of the importance of gingival examination and referral to periodontist for periodontal problems and should also consider the important role that a periodontist plays in multidisciplinary dentistry.

An analysis of responses to the question concerning the dentists' decision making in various clinical scenarios showed that the most frequent surgical procedure for what, patients have been referred are peri-implantitis therapy and ridge augmentation but crown lengthening is the procedure that general dentists mostly conduct themselves. These results are similar to the results of Ghiabi and

Matthews [15] study, in which dentists reported providing oral or periodontal surgical therapy to a much more limited extent. Frenectomy, gingivectomy and crown-lengthening procedures were the most common surgical procedures performed by respondents. In addition, dentists reported referring patients in need of implant-related surgical procedures (i.e., sinus and ridge augmentations and removal of failed implants) more commonly to oral surgeons.

Also in studies by Lanning et al. [16] and Brown et al. [17] it was stated that the most common procedures referred to periodontist are those which involve more complicated or higher risk surgical procedures such as guided tissue regeneration, implant procedures. Again results of these studies are in agreement with the result our study.

Another considerations concerning the workplace (private or public office/clinic) and years of practice showed that dentists who were practicing simultaneously in both private and public clinics have made higher periodontal referrals (100%) than those who were practicing only in private or public office/clinic (79.6% and 90.2% respectively). And those whose experience was less than 5 years have made the highest number of referrals (94.1%) followed by (with a slight difference) those with more than 5 years of experience (93.1%). These findings are nearly similar to the study of Cherian et al. [4] in which results revealed that 71% of private practitioners referred patients to periodontists of which majority had clinic since more than 10 years.

But results from the studies by Brown et al. [17] and Betof et al. [18] revealed the more recent graduates and those who rated their periodontal education more highly were more likely to treat periodontal patients themselves than to refer, and the reason for that was explained by the higher possibility of GPs keeping the lower severity cases in-house and referring only patients who are more difficult to treat, namely those with a greater disease severity.

Analysis of responses to the questions concerning the number of referrals have revealed average referral of 3.02 patients per month and the highest number of referral was reported to be up to 20 patients per month. Considering the number of periodontal referrals made, it is important to realize that the considerable

majority of dentists (89%) responded that they refer at least 1 patient per month and that 11% of them have reported no referral during the past month. This results need to be considered in connection with the findings of Lee et al. [10] who found that among 160 dentists in Michigan, 13% of the respondents had not made any periodontal referrals during the past month, 69% had referred between one and five patients, and 18% more than five patients.

Finally, the last question considering the retraining programs general dentists participated in 1 year, showed that only less than one third of the respondent have attended to such programs. These respondents have participated in 1 (87.1) or maximum 2 (12.9) programs a year. These findings were similar to the results of the study conducted by Cherian et al. [4]. In their study they concluded that majority GPs attend <5 CDE programs/year. Interesting data from Lee et al. [10] showed that the more the respondents wanted to treat periodontal patients in their own practice, the more they wanted to participate in continuing education (CE) courses about periodontal therapy.

## CONCLUSION

Our study showed that the main factors affecting the decision making to refer a patient to periodontist are based on the severity of the signs and symptoms and also the complexity of the treatment modalities, therefore to provide an optimal long-term outcome for patients, general dentists need to consider the primary signs of periodontal disease and necessity of referring the patients in early stages more serious.

## Author Contributions

LZ: conception - constructing an idea or hypothesis for research and/or manuscript; design - planning methodology to reach the conclusion; materials - biological materials, reagents and referred patients; data collection and/or processing - taking responsibility in execution of the experiments, patient follow-up, data management and reporting; literature review - taking responsibility in this necessary function; analysis and/or interpretation - taking responsibility in logical interpretation and presentation of the results; writer - taking responsibility in the construction of the whole or

body of the manuscript; critical review - reviewing the article before submission not only for spelling and grammar but also for its intellectual content. FV: supervision - organising and supervising the course of the project or the article and taking the responsibility.

## Conflict of Interest

There is no conflict of interest.

## Funding

There is no financial support.

## Regulatory Statement

This study was conducted after obtaining approval from Research Ethics Committee at Shahid Sadoughi University of Medical Sciences (No: IR.SSU.REC.1398.137 at 09/17/2019).

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Date submitted: 2021 Jan 25

Accept submission: 2021 May 12

## Appendix 1 - Questionnaire

Please answer the questionnaire based on your personal practice: **Gender:** female male

1. Choose your workplace:

Private dental office ( ) Public Clinic ( ) Both ( )

2. Years of practice:

Less than 5 years ( ) 5-10 years ( ) more than 10 years ( )

3. Do you make patient's referral to periodontist for periodontal treatments?

Yes ( ) No ( )

4. If your answer to last question was Yes how many times per month do you consult a periodontist or refer a patient to periodontist? ...../month

5. By observing which signs or symptoms do you consult a periodontist?

Gingival Bleeding ( )

Presence of periodontal pockets ( )

Tooth mobility ( )

Gingival over growth ( )

Gingival recession ( )

Other mucogingival problems ( )

6. Choose one of the three options in relation to each clinical scenario:

a) Perform the procedure

b) Do not perform the procedure

c) Refer the patient to periodontist

Clinical scenario	a	b	c
Scaling and root planing	a	b	c
Flap surgery	a	b	c
Ridge augmentation	a	b	c
Depigmentation	a	b	c
Crown lengthening	a	b	c
Mucogingival surgery	a	b	c
Implant surgery	a	b	c
Peri-implantitis therapy	a	b	c

7) Did you participate in any periodontal retraining programs during last year? Yes ( ) No ( )

Number of the participated periodontal retraining programs? .....