

Chapter 8

Treatment Strategies in Periodontal Disease Management in Korea

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Introduction

The management strategy for periodontal disease in any community depends on the disease epidemiology and social environment for health care. Therefore, this paper will focus on the demand for, and the provision of, periodontal care, together with the current status and trend of periodontal disease management in Korea.

Demand for periodontal management

Epidemiology of periodontal disease

In Korea, recent epidemiological studies on periodontal disease were done in 1995 and 2000, based on clinical examinations and the Community Periodontal Index of Treatment Need (CPITN) system.

As shown in Table 1, periodontitis increasingly appears in the adult population over the age of 30. A prevalence of periodontitis of 31 to 35% was reported in the adult population. The prevalence of periodontal disease, including gingivitis in the adult population, is higher than 80%.

Demand for periodontal care

The need for periodontal care is determined

by the prevalence and severity of disease in any population. Therefore, analysis of epidemiology data for the adult populations will be required to evaluate the quantity of the demand for periodontal health care services.

As is apparent in Table 2, Korean society is aging. The percentage of the young population is shrinking slowly and the percentage of adults over 30 years old continues to increase from 43.8% in 1990 to 53.0% in 2000. It is expected to be 61% in 2010, and 66% in 2030. This indicates the potential for an increase in the number of people suffering from periodontal disease. This is because periodontitis usually appears after the age of 30 years.

The numbers of people with periodontal disease is roughly estimated at 1/3 of the population over the age of 30 (Annals by the Ministry of Health and Welfare in Korea 1995, MOHW Health Resource Division 2002, KIOHS 2000). Therefore the number of people with periodontal disease in 1990 and 1995 was approximately 6.2×10^6 and 7.3×10^6 respectively, and increased to 8.8×10^6 in 2002. The rise in the proportion of elderly people over the age of 65, from 5.13 to 7.13%, during this period also increased the need for complex periodontal care, as periodontal disease increased in both severity and prevalence with age (Table 3). An epidemiological study (Moon et al 1995) examined the prevalence of

Author	Method	Age of population	Prevalence		Evaluation
			Gingivitis	Periodontitis	
Korean Dental Association (1989)	Randomized population	3-65 30-65	29.7	31.0	CPITN
Moon et al (1995)	Randomized population	total 30~	32.8 55.7	15.5 32.3	CPITN
KIOHS (2000)	Randomized population	total 30~	32.4 59.6	11.8 33.8	CPITN

Table 1. Prevalence of periodontal diseases in Korea

	1975	1980	1985	1990	1993	1995	1997	2000	2002	2005	2010
Total (x10 ³)	35,280	38,124	40,806	42,869	44,194	45,093	45,991	47,275	48,062	48,785	49,123
0-9 y	25.56	22.27	19.14	16.44	15.00	14.88	14.56	14.99	14.72	14.08	12.96
10-19 y	25.31	23.56	21.81	19.52	18.50	17.12	16.25	14.70	13.86	6.37	6.89
20-24 y	8.71	10.74	10.47	10.13	10.25	9.74	8.91	8.17	8.25	7.67	6.12
25-29 y	7.19	8.06	10.04	10.09	9.51	9.54	9.67	9.19	8.43	7.77	7.36
30-34 y	12.07	6.62	7.57	9.64	9.90	9.53	9.09	9.00	9.17	8.76	7.47
35-44 y	11.42	11.69	11.80	12.88	14.45	15.71	16.81	17.52	17.43	17.12	16.65
45-54 y	7.37	8.09	9.32	9.77	9.89	10.00	10.15	11.20	12.20	13.93	15.86
55-64 y	4.62	5.16	5.56	6.41	7.13	7.57	7.98	8.11	8.22	8.52	9.78
65+ y	3.45	3.83	4.28	5.12	5.51	5.89	6.37	7.13	7.74	8.65	9.94
73 y (x10 ³)	11,721	13,488	15,720	18,786	20,728	21,966	23,154	25,037	26,312	27,991	30,226

Table 2. Population trend and proportion ratio by age group in Korea

periodontal disease in each age group of the adult population. The proportion of periodontally healthy people was 27 % of the 25 to 29 year old group and decreased to less than 1% of the 55 to 64 year group. The proportion of people suffering from severe

forms of the disease was 1.7 % of the 30 to 34 year old age group and increased to more than 13 % of the 55 to 64 year old age group.

	Age	0 Healthy	1 Bleeding	2 Calculus	3 Shallow Pocket	4 Deep Pocket
1995	25-29	27.3	2.4	67.2	3.3	0.1
	30-34	19.3	3.5	64.8	10.6	1.7
	35-44	17.3	3.0	60.1	15.2	4.4
	45-54	9.1	2.9	50.8	31.0	5.4
	55-64	0.7	1.3	38	41.3	13.3
	65 over	2.5	0.3	23.2	40.3	12.7
	>30 yr	12.06	2.58	53.10	25.55	6.70
Total popln.	14.63	2.55	55.45	21.78	5.59	
2000	25-29	16.83	11.22	66.43	5.06	0.46
	30-34	11.12	10.59	64.20	12.90	1.18
	35-44	9.67	8.78	58.83	18.48	4.25
	45-54	5.46	5.66	55.03	27.57	6.29
	65-74	3.77	7.24	42.60	37.59	8.80
	75 over	4.97	10.01	40.82	36.69	7.52
	>30 yr	6.54(2.22)	7.64(1.11)	52.00(1.89)	27.34(0.67)	6.49(0.10)
	>65 yr	4.16(2.58)	8.14(0.77)	42.02(1.69)	37.30(0.84)	8.38(0.12)
Total popln.	14/56(3.13)	11.65(1.10)	50.97(1.34)	18.48(0.36)	4.32(0.06)	

(1995 report cited from Moon HS, J Korean Dent Assoc 6:351, 2000 report cited from KIOHS report)

Table 3. Periodontal conditions by age group as a percentage of subjects by highest CPI score and mean number of sextants affected (in parentheses) in 2 studies in 1995 and 2000

Age group (years)	Prop. in total popln.(%)	Complex treat in each group (%)	Complex treat in whole popln (%)	Perio patients in total popln (%)
25-29	9.19	0.46	0.042274	0.51
30-34	9.0	1.18	0.1062	1.27
35-44	17.52	4.25	0.7446	3.98
45-54	11.2	6.29	0.70448	3.79
55-64	8.11	10.42	0.844251	3.72
65+	7.13	8.38	0.599494	3.26
Total popln	47,275 x10 ³		3.04% (1,437 x10 ³)	16.53% (7,814 x10 ³)
>30 y	25,037 x10 ³			33.83% (7,573 x10 ³)
Periodontal pt	8,345 x10 ³			

Table 4. Estimation of patient population needing complex periodontal care in 2000

Provision of periodontal care in Korea

General dentists

In Korea, the first school of dentistry opened in 1922 and the School of Dentistry at Seoul National University first held lectures in 1946. Today, 11 dental schools have about 760 graduates every year. This results in approximately one dentist for every 4480 people in 1990, 2,990 in 1997 and 2,618 in 2000. The patient care ratio has continued to improve with the ratio of adults to dentists being 1,956 in 1990, 1,429 in 1997, and 1,389 in 2000. Fortunately many general practitioners are interested in the periodontal field, resulting in considerable specialized periodontal care being provided these days. The importance of public service dentists at the community level cannot be overemphasized. Since 1984, dentists graduating from college have been required to do 3 years of community service, delivering community oral health education and other prevention-oriented services, instead of military service. Approximately 1,300 public dentists

and 1,200 dental hygienists worked in the community in 1997.

Periodontists

Postgraduate courses in Periodontics have been offered since 1957 at Seoul National University. Similar courses are now offered at 11 dental schools and 5 hospitals. Approximately thirty periodontal specialists graduated every year during the 1990s. The numbers of qualified periodontists in Korea were 140 in 1990, 402 in 2000, and 521 in 2003. The Korean Academy of Periodontology (KAP) listed 780 practicing periodontists in 1997 and 1,200 in 2002, which constitutes approximately 5% of the total number of practicing dentists.

As shown in Table 5, the ratio of the adult population to periodontists was 39,300 in 1990 to 28,450 in 2000, which is 10-times greater than the ratio of total population/general dentists. The number of periodontitis patients per periodontist was 9,483 in 2000, being 3 times higher than the population to dentist ratio.

	Population			Dentist				Periodontist			
	Pop>30 (x 10 ³)	PD pt (x 10 ³)	Comp tx need (x 10 ³)	No	Pop /dentist	Pop>30 /dentist	PD pt /dentist	No	Pop>30 /perio	PD pt /perio	Comp /perio
1975	11,721	3,907	1266	2,512	14,045	4,666	1,555	141	83,120	27,709	8,267
1980	13,488	4,496	1258	3,549	10,742	3,800	1,267	204	66,110	22,039	6,167
1985	15,720	5,240	1346	5,375	7,592	2,924	975	310	50,710	16,903	4,343
1990	18,786	6,262	1414	9,606	4,480	1,955	652	478	39,300	13,100	2,959
1995	21,957	7,322	1497	13,668	3,300	1,562	536	680	32,304	10,768	2,291
1997	23,154	7,720	1544	15,370	2,990	1,429	502	780	29,684	9,897	1,945
2000	25,037	8,345	1638	18,026	2,610	1,388	463	880	28,450	9,483	1,772
2002	26,312	8,770	1751	19,724	2,420	1,334	445	1200	20,880	6,960	1,359
2005	27,991	9,330	1866	22,274	2,180	1,256	409				
2010	30,226	10,075	2014	26,524	1,870	1,139	380				

Table 5. Population trend per dentist and periodontist in Korea

Assuming that the average periodontist treats 200 cases of severe destructive periodontitis per year, it would take more than 50 years to treat all current patients. Considering that at least 17 % of these patients may have recurrent diseases or refractory forms (Hirschfeld & Wasserman 1978, McFall 1982), there is an obvious abundance of disease that requires treatment. It would be impossible for periodontists to manage all the patients with periodontal disease. Therefore, periodontists need all the help they can get from the general dental practitioners in order to control periodontal disease.

Strategies to manage the estimated large patient population should include general and public service dentist serving as both primary periodontal care providers and in the delivery of primary preventive periodontal care.

Current status of periodontal management in Korea

much interest in research in periodontal regeneration. Some periodontists have also been involved in osseointegrated implants since around 1991 and the importance of soft tissue management has been advocated for the long-term maintenance of implants.

Public awareness regarding periodontal disease and its effect on systemic health has increased recently. Greater public awareness and increased expectations among patients have led general dentists to make more referrals and better diagnosis. Some general dentists carry out periodontal care themselves and regularly refer patients to periodontists for GTR, implant surgery and periodontal plastic surgery.

Although the prevalence of periodontitis and the demand for periodontal care is as high as 35%, the proportion of periodontally managed cases reported to the Medical Insurance Management Center's was only

4.69% of the cases treated in dental clinics and hospitals in 1995. This is despite the fact that severe periodontal disease exists in more than 10% of the population. However, reports from University Dental hospitals indicated that periodontal care comprises 31.0% of all dental care done in the University Dental hospital. This means that periodontal care is mainly performed in University Dental hospitals and is rarely done in local dental clinics.

According to one report (Ryu 1996), the scope of periodontal care was extended to surgery by more than 50% of the periodontists and to subgingival curettage in 75% of general dentists. He reported that 25% of dentists had an active attitude towards periodontal disease, although more than 50% of them often change their attitude so as to minimize the amount of periodontal care. This attitude was attributed to frequent surveillance and investigation by insurance management centers and to the inadequate fees paid by these centers. General practitioners and even periodontists were not inclined to provide adequate periodontal care to the patient because of the current situation of the medical insurance system which controls and supervises periodontal care and the inadequately scheduled fee for periodontal care. Therefore, in order to provide adequate treatment for periodontal patients, the treatment fees and surveillance systems must be optimized.

A survey (Chung 2003) was recently performed on the attitudes of dentist and periodontists to periodontal patients (Table 6a-c). It was found that the frequency of periodontal care is increasing. This study compared different methods of periodontal care between the general dental practitioner and periodontists. It is encouraging that younger dentists are doing an increasing amount of periodontal care.

Areas of dental care	Prop. of perio pt	Prof of perio care	Prop of perio income
Perio care	48.6 (8.9)	48.4 (8.7)	39.4 (8.6)
Total care	31.6 (4.8)	28.7 (4.7)	17.6 (4.6)
No Response	28.1 (2.9)	24.5 (2.8)	17.2 (2.8)

Table 6a. Proportion of periodontal practice amongst daily dental care according to main area of dental care

Areas of dental care	Scaling & OP	Curettage	Plaque control education	Perio Flap	Bone Graft	GIR	Furcal Therapy
Perio care	87	87	75	87	88	75	88
Total care	99	97	93	85	73	48	82
No Response	92	93	86	68	48	32	58

Areas of dental care	Perio-Pros	Perio-Ortho	G. graft /MG surg	Maint. Care	Perio Esthetics	Dental Implant
Perio care	19	37	81	87	81	93
Total care	70	24	68	93	67	75
No Response	45	13	36	63	48	63

Table 6b. Percentage of dentists practicing periodontal care

Suggestions for periodontal disease management

Role of General dentists and periodontists in the management of periodontal disease

A realistic approach to the management of periodontal disease on a large scale would be for periodontal care to be carried out by general dental practitioners. General dental practitioners should be able to recognize

gingivitis and early periodontitis before it has progressed to the advanced stages. General dentists should share the responsibility for the early detection and treatment of periodontal disease, by diagnosing periodontal disease and distinguishing the different types of patients, based on what level of periodontal therapy they require. For the early detection and treatment, every oral examination should include an evaluation of the periodontium. To simplify the periodontal examination including probing into pocket, general practitioners are recommended

Dependent Variable Frequency of practice/w	Perio care	Total care	No response
Scaling	13.7 (3.2)	14.3 (1.9)	7.3 (2.0)
TBI	35.4 (3.1)	9.2 (1.9)	7.8 (2.0)
Recall	13.3 (4.3)	9.0 (2.6)	9.3 (2.8)
Occlusal therapy	2.9 (2.4)	3.5 (1.5)	5.0 (1.6)
Flap	4.7 (1.1)	3.2 (0.7)	2.0 (0.7)
Bone graft	1.8 (0.5)	1.6 (0.3)	0.6 (0.3)
GIR	1.3 (0.3)	0.9 (0.2)	0.5 (0.2)
Furcal therapy	1.0 (0.3)	1.1 (0.2)	0.5 (0.2)
Gingival graft	0.7 (0.2)	0.7 (0.1)	0.4 (0.1)
Dental implant surgery	1.8 (0.5)	1.2 (0.3)	1.3 (0.3)

Table 6c. Frequency of practicing periodontal care (per week) by respondents according to area of dental care

to use PSR (Periodontal Screening & Recording) which is an adaptation of the Community Periodontal Index of Treatment Needs (CPITN). For screening, the dentition is divided into sextants. A probe with a ball end 0.5 mm in diameter and a color-coded area extending from 3.5 to 5.5 mm and a gentle probing is recommended. At least six areas in each tooth should be examined. For each sextant with one or more teeth or implants, only the highest score is recorded.

Referral system

In periodontics, one of the hallmarks of good practice is the ability to customize an appropriate treatment plan for the patient. According to Fetner (1994), there are three types of patients, based on the level of periodontal therapy required:

1) patients who don't require surgery (early periodontitis with no furcation involvement should be treated by the general

practitioner who has sufficient skills in nonsurgical therapy),

2) patients who may require surgery and

3) patients who will require surgery. The two latter types of patients are referred to periodontists with the data concerning their original condition diagnosis, charting, completed procedure, charting at re-evaluation, plaque score, oral hygiene aids and patient motivation.

Referrals to periodontists are common in Korea. In Chonnam National University Hospital, 4.5% of all dental outpatients and almost 33% of the periodontal patients have been referred by general dentists. The referred patients are managed with additional treatment by periodontists to achieve their health, functional, and aesthetic goals.

Role of Periodontists in the management of periodontal disease

Referred patients who have advanced or aggressive periodontitis could be managed with

additional treatment by periodontists to achieve their health, functional, and esthetic goals. The choices are highly individualized and depend upon a complete oral and periodontal examination. Thus a full range of treatment alternatives is available for a wide spectrum of disease severity and patient circumstances.

Periodontists are able to concentrate on the complex types of periodontal care such as surgical pocket therapy, regenerative therapy such as bone grafting and GTR, plastic reconstructive surgery, and interdisciplinary therapy, transplantation and dental implant treatment.

Conclusion

Due to the rapid increase in the elderly population (>65y) in our aging society, an increase in the number of people suffering from periodontal disease requires the cooperation between general dentists and periodontists. Periodontists are able to concentrate primarily on the complex treatment of advanced or severe form of periodontitis. Periodontists should provide periodontal care including an interdisciplinary approach to saving teeth even though implant therapy has become one of the routine modes in replacing missing teeth. Implant therapy should be the last mode of periodontal therapy, because the tooth given by nature is the best.

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