

## < Research Data >

# Current status and issues of smoking cessation efforts in dental clinics in Japan: Tobacco control based on interprofessional collaboration

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### Abstract

**Objectives:** To analyze the current status of smoking cessation promoted by dental clinics in Japan and to investigate the issues faced in promoting tobacco control measures through interprofessional collaboration.

**Methods:** A questionnaire survey on smoking cessation was conducted from October to November 2018. Of the 1,020 dental clinics that were sent the questionnaire, 406 responded (response rate: 40.0%). Of these, the 400 valid responses were included in the analysis set. The analysis consisted of basic tabulation and bivariate and multivariate analyses based on the status of collaboration. The significance level was set to below 5%.

**Results:** 91.5% of the respondents be aware of the current smoking status of patients, and 69.8% had performed examinations for smoking cessation during treatment for periodontal disease. 46.3% of them responded that there are problems with supporting smoking cessation, and that the most common problem (67.0%) was “smoking cessation is not included in the reimbursement of medical fees”. Meanwhile, 30.8% of the dental clinics were not doing anything in particular regarding education on smoking cessation, and 34.6% of those admitted to having problems with promoting cessation, stating the reason to be “inadequate smoking cessation skills.” Only 11.8% were promoting smoking cessation in collaboration with areas other than dentistry, while 91.5% were enforcing outpatient visits for smoking cessation treatment as well as collaborating with physicians.

**Conclusions:** The findings suggested that only a few dental clinics are supporting smoking cessation in collaboration with areas other than dentistry. They also demonstrated the need for education for dental healthcare personnel to improve their skills related to smoking cessation efforts.

**keywords:** dental clinics, smoking cessation, content analysis, interprofessional collaboration

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## I. Introduction

The adult smoking prevalence in Japan is on a yearly decline and is presently at 17.7%, according to the results of a survey conducted in 2017[1]. However, the rate of decline appears to have flattened out in recent years. In addition, the rate at which smoking cessation treatment is covered under health insurance plans is low, and the success rate of

smoking cessation in individuals after 9 months of visiting an outpatient department for smoking cessation treatment is approximately 30% [2]. In this situation, there is a demand for the promotion of smoking cessation based on interprofessional collaboration that is centered on healthcare workers; this relates to the national policy goal of decreasing the percentage of adult smokers [3]. Tobacco control in advanced countries now involves the promotion of restrictions

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on tobacco as well as the proactive involvement of dental healthcare personnel in smoking cessation. In the United States, which took the lead in dental smoking cessation intervention, dentistry was engaged from the initial stage of the preparation of tobacco control measures [4], and at least 80% of dentists routinely performed smoking cessation interventions [5]. At almost the same time as the United States, the United Kingdom also clarified the role of dental healthcare personnel in the promotion of smoking cessation [6], while Swedish dental healthcare personnel are reported to regard smoking as a major health problem [7]. As such, it is now internationally understood that smoking cessation intervention involving dentistry is effective [8]. However, for smoking cessation in dental practice in Japan, it was shown that the interest of dental healthcare personnel in performing smoking cessation intervention for patients increased [9,10] only after the publication of many case reports on smoking cessation. For the promotion of smoking cessation in dentistry in Japan, henceforth, a strategy for smoking cessation by dental healthcare personnel that includes collaboration between multiple disciplines needs to be investigated. However, the current status of smoking cessation in dental clinics has not been sufficiently elucidated.

This study aimed to reveal the current status of and problems on smoking cessation in dental clinics by surveying the implementation of smoking cessation in dental clinics in Japan, the content of smoking cessation efforts, and collaboration with other professions.

## II. Methods

### 1. Survey subjects and methods

This study aimed to understand the actual status of smoking cessation in dental clinics with a focus on regional collaboration. The study subjects were dental clinics promoting accessible smoking cessation based on certain requirements of a regional professional organization. Of the dental clinics in the dental associations located in four prefectures on the “List of Dental Clinics Implementing Smoking Cessation” (accessed October 1, 2018), 1,020 clinics that are members of one metropolitan and two prefectural dental associations were selected as the subjects. The survey period was from October 31 to November 13, 2018. After gaining the approval of the clinic director, who is the manager of the facility, an anonymized self-administered questionnaire survey was performed via postal mail.

### 2. Survey content

The survey items consisted of the respondents’ basic characteristics (sex, age, number of years in professional

service), an overview of the respondent’s dental clinic (number of employees, number of years in operation), the system for implementing smoking cessation, methods used to learn the theory and practice of smoking cessation, the mean time allocated to smoking cessation per patient (at one examination session), the reasons for implementing smoking cessation support, the content of the smoking cessation support being implemented, the status of collaboration on smoking cessation support, opinions about regional collaborative support on smoking cessation, the nature of problems (hindrance, blockage, etc.) encountered when delivering smoking cessation support, and the content of smoking cessation promotion. Responses took the form of a number value for the mean time allocated to smoking cessation efforts, a self-reported opinion on regional collaboration on smoking cessation, and a selection from two or more responses for the other items.

The definitions documented in the questionnaire clarified that “smoking” in this study included new types of tobacco (heated tobacco products, electronic cigarettes) in addition to paper-wrapped tobacco, “employees” also included the respondents themselves, and “collaboration” indicated “collaborative support on smoking cessation based on mutual referral/inquiry by dental and other facilities, and through the respective roles develop tobacco control in multiple disciplines.” The questions asked about the current situation as of October 2018.

### 3. Analyses

Of the 1,020 dental clinics to which the questionnaire was sent, five were returned as undeliverable mail. 6 out of 406 responding dental clinics (recovery rate: 40.0%) were excluded. The details are two returned a mostly uncompleted questionnaire and four responded that they were not presently performing smoking cessation.

The basic tabulation and descriptive statistics, and a comparison of the various items, were performed using a  $\chi^2$ -test based on the status of the collaboration. From the results of the bivariate analysis, items showing a significant difference were used as the explanatory variables and the status of collaboration was used as the objective variable in the multivariate analysis that was performed via multiple logistic regression. The statistical analysis was performed using IBM SPSS Ver.25 (Japan IBM, Tokyo) and the significance level was set at below 5%.

Content analysis was performed of the free description responses using the Berelson method as a reference [11]. The research question of the study was “What kind of collaboration do dental clinics require to promote effective and efficient smoking cessation in the region?” The response to this question was set as “Dental clinics require ( ) to pro-

mote smoking cessation in collaboration with the region.” After converting the responses into data form, the first author aggregated the recorded units repeatedly for a total of four times as the fundamental analysis. Categorization of this analysis was performed by four researchers (a physician, a dentist, a nursing-teacher, and a dental hygienist) including the first author, each performing it twice; finally, a consensus was reached. The reliability of each category was confirmed by two individuals (one dentist engaged in tobacco control and one public health nurse) not involved in this study and the concordance rate was calculated using the W.A. Scott formula [12].

#### 4. Research ethics

This study was subjected to an ethical research review by the National Institute of Public Health and was conducted once approval was granted (Ethical Approval Number: NIPHIBRA#12210). Before the study, written approval was obtained from the president of the Japan Dental Association, to which the survey target clinics belonged. An explanation of the study purpose, study objective, reason for the choice of subjects, method of collaboration, data handling, and disclosure of the study results was included. It was also explained that when disclosing the results, individual dental clinics would not be identified and that consent to cooperate in the study was based on the free will of the clinic director. This information was attached to the anonymized questionnaire and sent to the subjects by postal mail. In order to confirm that the subjects understood the explanation before responding to the questions, a check column was placed at the beginning of the questionnaire. The questionnaire was anonymized and consent to cooperate in the study was obtained from the subjects by them returning the questionnaire in the enclosed return envelope.

### III. Results

#### 1. Basic characteristics of the respondents

Table 1 shows the basic characteristics of the respondents. The respondents consisted of 366 (91.5%) males and 29 (7.2%) females. The ages were as follows: 185 (46.3%) in their 60s, which was the most common, followed by 121 (30.3%) in their 50s. Time period of service years was  $\geq 30$  years for 278 (69.5%), which was the most frequent, followed by  $\geq 20$  but  $< 30$  years for 88 (22.0%).

#### 2. Characteristics of the dental clinics analyzed

Table 2 shows the characteristics of dental clinics. The number of dental clinics with 3–5 employees including part-time employees was 158 (39.5%), which was the most common, followed by  $< 3$  employees and then 6–10 employees

**Table 1 Basic characteristics of the respondents (N=400)**

Sex	Male	366 (91.5)
	Female	29 (7.2)
	Not mentioned	5 (1.3)
Age (years)	20s	0 (0.0)
	30s	6 (1.5)
	40s	36 (9.0)
	50s	121 (30.3)
	60s	185 (46.3)
	$\geq 70$ s	46 (11.5)
	Not mentioned	6 (1.5)
Time period of service years	$< 5$ years	0 (0.0)
	$\geq 5$ years but $< 10$ years	2 (0.5)
	$\geq 10$ years but $< 20$ years	26 (6.5)
	$\geq 20$ years but $< 30$ years	88 (22.0)
	$\geq 30$ years	278 (69.5)
	Not mentioned	6 (1.5)

Number value: number of respondents (%)

**Table 2 Characteristics of dental clinics (N=400)**

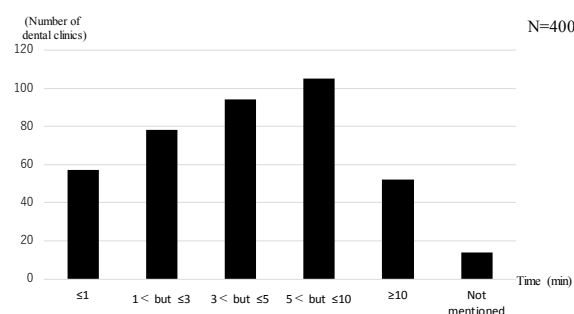
Number of employees <sup>†</sup> (all employees including the dentist)	$< 3$	101 (25.3)
	3–5	158 (39.5)
	6–10	101 (25.3)
	11–20	30 (7.5)
	$\geq 21$	8 (2.0)
	Not mentioned	2 (0.5)
Time period of years in service <sup>‡</sup>	$< 5$ years	8 (2.0)
	$\geq 5$ but $< 10$ years	7 (1.8)
	$\geq 10$ but $< 20$ years	63 (15.8)
	$\geq 20$ years	315 (78.8)
	Unknown	3 (0.8)
	Not mentioned	4 (1.0)

Number value: <sup>†</sup> number of facilities (%)

for 101 (25.3%) clinics. For years in operation, 315 (78.8%) clinics answered  $\geq 20$  years, which was the most common, followed by  $\geq 10$  years but  $< 20$  years for 63 (15.8%) clinics.

#### 3. Implementation of smoking cessation support

The occupations providing smoking cessation support were “dentist and dental hygienist” in 187 (46.8%) dental clinics, which was the most common, followed by “dentist only” in 164 (41.0%), “not fixed” in 23 (5.8%), and “dental hygienist only” in 3 (0.8%) clinics, in that order. The mean time allocated to smoking cessation support per patient per treatment session was 10 min for 93 (23.3%) dental clinics.



**Figure 1 Smoking cessation support performance time (mean time allocated per patient per treatment)**

**Table 3 Implementation of smoking cessation**

	Total N=400	Collaboration n=47	No collaboration n=353	P-value <sup>†</sup>
Methods of acquiring knowledge on support and skills				
Reading books and articles	196 (49.0)	26 (55.3)	170 (48.2)	0.356
Participating in workshops and seminars	157 (39.3)	26 (55.3)	131 (37.1)	0.016
No specific learning method	123 (30.8)	7 (14.9)	116 (32.9)	0.012
Study groups and in-hospital study meetings	59 (14.8)	11 (23.4)	48 (13.6)	0.075
E-learning and attending lectures	14 (3.5)	3 (6.4)	11 (3.1)	0.252
Other	8 (2.0)	2 (4.3)	6 (1.7)	0.240
Reason for implementation of smoking cessation				
Smoking is linked with dental disease	367 (91.8)	45 (95.7)	322 (91.2)	0.289
Smoking cessation is important and necessary in dentistry	232 (58.0)	32 (68.1)	200 (56.7)	0.136
We are professionals responsible for health promotion	211 (52.8)	31 (66.0)	180 (51.0)	0.054
Smoking cessation at dental clinics is effective	169 (42.3)	27 (57.4)	142 (40.2)	0.025
Consultation and questions on it were received from patients	66 (16.5)	12 (25.5)	54 (15.3)	0.076
Requests to introduce smoking cessation were received from the staff	17 (4.3)	5 (10.6)	12 (3.4)	0.021
Other	14 (3.5)	1 (2.1)	13 (3.7)	0.586
Targeted individuals				
All patients	65 (16.3)	13 (27.7)	52 (14.7)	0.024
Other than "All patients"				
Patients receiving dental treatment (such as periodontal disease)	279 (69.8)	36 (76.6)	243 (68.8)	0.277
Smokers interested in quitting	243 (60.8)	37 (78.7)	206 (58.4)	0.007
Maintenance	171 (42.8)	22 (46.8)	149 (42.2)	0.549
Smokers not considering quitting	170 (42.5)	25 (53.2)	145 (41.1)	0.114
Patients before a surgical treatment (implant/tooth extraction, etc.)	114 (28.5)	22 (46.8)	92 (26.1)	0.003
Patients who have already started smoking cessation	94 (23.5)	21 (44.7)	73 (20.7)	0.000
No specific target	31 (7.8)	2 (4.3)	29 (8.2)	0.340
Other	5 (1.3)	1 (2.1)	4 (1.1)	0.564
Content understood through interviews				
Present smoking status	366 (91.5)	46 (97.9)	320 (90.7)	0.095
Past smoking experience and smoking cessation experience	187 (46.8)	31 (66.0)	156 (44.2)	0.005
For smokers, the status of preparedness to quit smoking	92 (23.0)	16 (34.0)	76 (21.5)	0.056
For non-smokers, the status of passive smoking	85 (21.3)	18 (38.3)	67 (19.0)	0.002
For smokers, calculation of the cumulative number of cigarettes smoked	63 (15.8)	15 (31.9)	48 (13.6)	0.001
For smokers, evaluation of level of nicotine addiction	42 (10.5)	10 (21.3)	32 (9.1)	0.010
Other	8 (2.0)	2 (4.3)	6 (1.7)	0.240
Main support content				
The impact smoking has on the oral cavity area	374 (93.5)	45 (95.7)	329 (93.2)	0.506
The effect (changes/improvement) that smoking cessation has on the oral cavity area	244 (61.0)	34 (72.3)	210 (59.5)	0.090
Motivation to quit smoking	217 (54.3)	35 (74.5)	182 (51.6)	0.003
Referral/inquiry from other dental clinic with non-smoking out-patient department, etc.	93 (23.3)	34 (72.3)	59 (16.7)	0.000
Specific smoking cessation methods	80 (20.0)	24 (51.1)	56 (15.9)	0.000
Other	7 (1.8)	0 (0.0)	7 (2.0)	0.330

Number values: number of dental clinics (%)

<sup>†</sup>  $\chi^2$ -test

Multiple responses were permitted.

ics, which was the most common, followed by 5 min for 91 (22.8%) clinics (Fig. 1).

Table 3 shows the results of questions on the implementation of smoking cessation. The most common method used to learn the theory and practice on smoking cessation support was "reading books and articles" for 196 (49.0%) dental clinics, followed by "participating in workshops and seminars" for 157 (39.3%). Meanwhile, "no specific learning method" was the case for 123 (30.8%) dental clinics, which was significantly more common among clinics with no collaboration than those with collaboration. "e-learning and attending lectures" was the case for 14 (3.5%) dental clinics. Concerning the reason for implementing smoking cessation support, "smoking is linked with dental disease" was mentioned by 367 (91.8%) dental clinics, making it the most common, followed by "smoking cessation is important and necessary in dentistry" for 232 (58.0%) clinics. With regard to how patients receiving dental treatment became

the subjects of smoking cessation support, "patients receiving dental treatment (such as periodontal disease)" was the case for 279 (69.8%) dental clinics, which was the most common, followed by "smokers interested in quitting" for 243 (60.8%) clinics. Moreover, "patients before a surgical treatment (implant/tooth extraction, etc.)" was the case for 114 (28.5%) dental clinics, "patients who have already started smoking cessation" for 94 (23.5%), and "all patients" for 65 (16.3%) clinics, which were all low values. However, the values were significantly higher for dental clinics who were collaborating than those who were not. The details on smoking as understood from a medical interview or patient interview were "present smoking status" for 366 (91.5%) dental clinics, which was the most common, followed by "past smoking experience and smoking cessation experience" for 187 (46.8%) clinics. Meanwhile, "evaluation of level of nicotine addiction" was mentioned by 42 (10.5%) dental clinics, "calculation of the cumulative number of cig-

arettes smoked” by 63 (15.8%), and the “for non-smokers, the status of passive smoking” by 85 (21.3%), which were all low values. However, the values were significantly higher for dental clinics working in collaboration than those who were not. The main support was “the impact smoking has on the oral cavity area” for 374 (93.5%) dental clinics, which was the most common, followed by “the effect (changes/improvement) that smoking cessation has on the oral cavity area” for 244 (61.0%) clinics. Meanwhile, “specific smoking cessation methods” were mentioned by only 80 (20.0%) clinics.

Concerning the status of problems encountered when providing smoking cessation support at dental clinics, 185 (46.3%) answered “present” and 215 (53.8%) “absent.” The problems were “smoking cessation is not included in the reimbursement of medical fees (it cannot be added as insurance points)” for 124 (67.0%) dental clinics, which was the most common, followed by “patient reaction (deterioration of relationships, rejection or resistance towards smoking cessation support)” for 101 (54.6%), “time cannot be allocated to smoking cessation support (it is difficult to secure time for smoking cessation support)” for 82 (44.3%), and “inadequate smoking cessation skills (the training of employees before and after graduation is inadequate)” for 64 (34.6%), in that order.

#### 4. Status of collaboration on smoking cessation

In total, 47 (11.8%) dental clinics responded that collaborative support on smoking cessation was “present” and 353 (88.3%) answered that it was “absent.” For those dental clinics implementing collaborative support, “outpatient departments that provide smoking cessation treatment” was mentioned by 43 (91.5%), which was the most common, followed by “administrative” by 8 (17.0%), “pharmacies” by 7 (14.2%), in that order. With regard to the professions providing collaborative support, it was “physicians” for 43 (91.5%) dental clinics, which was the highest, followed by “pharmacists” for 10 (21.3%), “school dentists” for 6 (12.8%), in that order. The main content of collaborative support efforts was the “introduction of outpatient departments that provide smoking cessation treatment” for 43

(91.5%) dental clinics, which was the most common, followed by “placarding and displaying smoking cessation-related materials and displays in the examination room” for 18 (38.3%), “explanations of nicotine-replacement products and pharmacy introductions” for 15 (31.9%), “acceptance of requests for smoking cessation from other institutions” for 8 (17.0%), and “documenting information on smoking cessation on the clinic’s website” for 3 (6.4%), in that order. The results of the multiple logistic regression analysis showed that the factors affecting smoking cessation based on interprofessional collaboration, and for which the model  $\chi^2$ -test and the various variables were significant ( $p < 0.01$ ), were “specific smoking cessation methods” in the main support content, “calculation of the cumulative number of cigarettes smoked” in the content understood through interviews, and the target patient “patients who have already started smoking cessation” (Table 4).

For what dental clinics need to promote smoking cessation based on region, the response “free description” was obtained from 176 (44.0%) dental clinics. Responses not related to the study questions, abstract expressions, and responses with an unclear meaning were excluded, and as such, responses from 162 dental clinics were included in the analysis set. From these 162 descriptions, 217 recorded units were analyzed and classified based on the similarity of significant contents. Then, 14 categories were formed (the name of the category is shown in square brackets [ ]), including [collaboration with medical departments, physicians, medical institutions, and medical associations], [collaboration with the administration], and [construction of a system for introducing outpatient departments that provide smoking cessation treatment]. The concordance rates of the categories were 79% and 85%, showing the reliability assurance of the categories (Table 5). The [collaboration with medical departments, physicians, medical institutions, and medical associations] category was formed from the descriptive units of “collaboration with medical departments,” “collaboration with physicians,” “collaboration with medical facilities and so on.” [collaboration with the administration] was formed from descriptive units such as “collaboration with the administration,” “collaboration with

**Table 4 Factors affecting interprofessional collaboration on smoking cessation**

	Partial regression coefficient	P-value	Odds ratio	95% confidence interval of the odds ratio	
				Lower limit	Upper limit
Main support content – Specific smoking cessation methods	-1.407	0.000	0.245	0.124	0.483
Content understood through interviews– For smokers, calculation of the cumulative number of cigarettes smoked	-0.760	0.043	0.468	0.224	0.976
Targeted individuals–Patients who have already started smoking cessation	-0.702	0.044	0.496	0.250	0.982

Model  $\chi^2$ -test  $p < 0.01$

Discrimination value 87.8%

the local government,” and “collaboration with health centers.” [construction of a system for introducing outpatient departments that provide smoking cessation treatment] was formed from descriptive units such as “introduction of an outpatient departments that provide smoking cessation treatment,” “system for introducing an outpatient departments that provide smoking cessation treatment,” and “information sharing with outpatient departments that provide smoking cessation treatment.”

#### IV. Discussion

This study aimed to elucidate the status of and problems with smoking cessation with a focus on interprofessional collaboration. Dental clinics who publicized that they implemented smoking cessation through their dental association were the target subjects. Managing dentists had many years of professional service, and though the size of the clinics was not large based on the number of employees. For individuals whose smoking status could be understood, smoking cessation was promoted for at least 5 min for patients with periodontal disease. However, collaboration with other professions was inadequate. For dental clinics to promote tobacco control measures based on collaboration with multiple professions, training for dental healthcare personnel to improve their smoking cessation skills is necessary. Furthermore, the need to position tobacco control in dentistry and build a scientific rationale for its efficacy was demonstrated.

##### 1. Characteristics of the respondents and dental clinics

Of the respondents, 91.5% were male, 76.6% were in their 50s or 60s, and 69.5% had  $\geq 30$  years of professional service. The number of founders or owners of clinics (87.0% male and 13.0% female) based on the 2016 national statistics and the male/female ratio showed no notable difference from the present study. According to the 2016 national

survey [13], those in their 50s (33.4%) and 60s (26.8%) accounted for approximately 60% of clinic founders; therefore, the age group of the respondents in this study was high and their professional service was long. For dental clinics managed by the respondents, the number of employees including part-time employees was 3–5, which was the highest, while 5 or fewer employees were present at more than 60% of the clinics. Based on the number of employees, the size of the dental clinics was not large. Moreover, dental clinics that had been in operation for  $\geq 20$  years accounted for approximately 80%, showing that these dental clinics have been performing dental therapy in the region for many years.

##### 2. Implementation of smoking cessation support

As for the learning methods to acquire knowledge and skills for implementing smoking cessation efforts, it became evident that 49.0% of dental clinic staff read books and published articles, while 39.3% participated in workshops and seminars. Meanwhile, for 30.8% of the dental clinics, “no specific learning method” was conducted. In addition, dental clinics not involved in collaboration with other professions showed a significant lack of learning. A Western randomized controlled trial confirmed that training in smoking cessation not only increased the rate at which smoking cessation was implemented, but the cessation rate of smokers receiving support also increased significantly [13]. In particular, e-learning, which is a method of education and learning using information transmission technology, has been reported to be useful as training for those giving guidance on smoking cessation and treatment [14]; however, it was being used by less than 10% of the dental clinics in the present study. Therefore, in the future, learning that incorporates e-learning programs is necessary to improve the skills of dental healthcare personnel. It is essential for dental clinics to promote the smoking cessation program so that dentists and dental hygienists should

**Table 5** What dentistry requires to promote smoking cessation based on regional collaboration

Category		Recorded units (%)	
1	Collaboration with medical departments, physicians, medical institutions, and medical associations	50	(23.0)
2	Collaboration with the administration	42	(19.4)
3	Construction of a system for introducing outpatient departments that provide smoking cessation treatment	32	(14.7)
4	Collaboration with schools, school dentists, and school physicians	20	(9.2)
5	Increased level of knowledge on smoking cessation in dentistry	18	(8.3)
6	Preparation of public relations medium	9	(4.1)
7	Collaboration with enterprises and groups	9	(4.1)
8	Calculation of health insurance points	8	(3.7)
9	Collaboration with medical departments, pharmacists, pharmacies, and pharmacy associations	7	(3.2)
10	Holding workshops, seminars, etc.	7	(3.2)
11	Establishment of laws and regulations	4	(1.8)
12	Movement toward the media and mass communication	4	(1.8)
13	Collaboration with health examinations and tests	4	(1.8)
14	Participation in events	3	(1.4)
Total recorded units		217	(100.0)

be able to support patients to support smoking cessation at their specific health guidance sessions. Smoking cessation interventions with a short duration have been reported to contribute to individuals quitting smoking [15]. Specifically, a smoking cessation intervention of within 3 min increased the smoking cessation rate significantly [16]. With limited human resources and time restrictions, the “short time” emphasized in the United States smoking cessation intervention guidelines [16] could be of use in the practice of smoking cessation promotion in dental treatment in Japan.

The significance of smoking cessation support at dental institutes has been demonstrated so far in several reports describing successful cases of smoking cessation support leading to the prevention of oral diseases [17]. In this study, the reason given for implementing smoking cessation efforts was “smoking is linked with dental disease” for 91.8% of the dental clinics, followed by “smoking cessation is important and necessary in dentistry” for 58.0%. The most common subjects of smoking cessation efforts were patients undergoing dental treatment for periodontal disease (in 69.8% of the dental clinics) followed by smokers interested in quitting smoking (in 60.8%). Given the facts that the link between periodontal disease and smoking has been established [18] and that the prevalence of periodontal disease in Japan is high [19], the promotion of smoking cessation as part of periodontal treatment and management is important. In Japan, where opportunities for smoking cessation intervention are limited, expanding smoking cessation efforts to all smokers through the use of dental treatment has been proposed [20]. In the future, apart from individuals wishing to quit smoking and those who attend a dental clinic for treatment, smoking cessation intervention from the viewpoint of motivation for smoking cessation is necessary. Moreover, details understood from a medical interview or patient interview included present smoking status for 91.5% of dental clinics, while past history of smoking, history of smoking cessation, status of preparation for smoking cessation, evaluation of nicotine addiction, calculation of the cumulative number of cigarettes smoked, and status of passive smoking for non-smokers were ascertained for less than half of dental clinics. The content of the main support was the impact of smoking on the oral cavity for 93.5% of the dental clinics and the effect of smoking cessation on the oral cavity area for 61.0%. Meanwhile, support for specific methods of smoking cessation was delivered by 20.0% of the dental clinics. In order to promote smoking cessation in a way that suits the condition of the subject, evaluation items such as the behavior modification stage [21], which is a condition of preparation for smoking cessation, history of smoking cessation, evaluation of nicotine addiction, and cumulative number of cigarettes smoked are necessary [22].

Therefore, matters that must be understood when smoking cessation is being promoted at a dental clinic are not only to confirm the current smoking status, but are also linked with the provision of specific support methods; hence, subject evaluation is necessary.

In this study, approximately half of the dental clinics reported that they have had problems with promoting smoking cessation. The most common problem was the fact that smoking cessation is not included when calculating the reimbursement of medical fees, which was the case for 67.0% of respondents; that was followed by patients’ reactions for 54.6% of the respondents, and difficulty with securing time for 44.3%. The rejection and resistance of patients toward smoking cessation intervention are considered to be due to cognitive distortion associated with nicotine addiction [23]. The results of this survey revealed that many smoking cessation efforts are not being calculated in the reimbursement of medical fees, which is a problem in the performance of such efforts. It has been reported that the top reason why periodontists in Japan do not promote smoking cessation is because “it has no insurance points.” [24] From that fact, also, there is a demand for the positioning of tobacco control in dentistry, validation of its effectiveness, and for a scientific rationale to be built.

### 3. Status of collaboration on smoking cessation

Based on the results of this study, few dental clinics are promoting smoking cessation in collaboration with other professions, and those in such collaborations are cooperating with physicians through introductions to outpatient departments that provide smoking cessation treatment. In addition, collaboration on smoking cessation was affected by support for continued smoking cessation, understanding the cumulative number of cigarettes smoked, and intervention that provides specific methods of smoking cessation. With regard to what is required by dental clinics to promote smoking cessation based on regional collaboration, the top-ranking items were [collaboration with medical departments, physicians, medical institutions, and medical associations] and [construction of a system for introducing outpatient departments that provide smoking cessation treatment]. From the above, we understood that collaboration with professions other than dentistry on smoking cessation efforts in dental clinics is presently inadequate, and importance is attached to cooperation with medical departments. Considering that the involvement of multiple types of medical healthcare in tobacco control increases the effectiveness of smoking cessation [25], the problems in the current smoking cessation system are related to nurturing dental healthcare personnel for the purpose of fulfilling the functions of the dental clinics, establishing collaboration

with medical departments that have an outpatient department that provides smoking cessation treatment, and exploring various comprehensive measures of implementation.

#### 4. Limitation

This study has some limitations, such as the fact that the statements on the current status and problems of dental clinics were based on responses obtained at a recovery rate of 40%, so the situation in dental clinics that did not respond could not be explored. In addition, there were no items in the questionnaire on the motivation and consciousness of dental healthcare personnel towards smoking cessation. As such, the correlation of the current status with the subjective evaluation could not be included in the discussion. In the future, it is necessary to encourage dental clinic managers to provide responses during the reply period taking into consideration the timing, period, etc., in which they can easily do so. The inclusion of a subjective evaluation in the survey items is a research issue.

This study aims at promoting a smoking cessation program targeting all patients receiving dental treatments, regardless of the presence/absence of smoking habit, ages, the purpose of their visit, the presence/absence of smoking experience, or oral diseases. However, the subject of “all patients” was somewhat too broad as a selection item in the questionnaire survey we conducted in this study, which left room for a different interpretation. It should be mandatory to define “all patients” more specifically in the future survey.

However, the actual status of smoking cessation efforts in dental clinics was revealed in this study, and the fact that knowledge that will contribute to the investigation of tobacco control based on interprofessional collaboration has been obtained is of great significance.

#### V. Conclusion

Directors of dental clinics implementing smoking cessation support have many years of experience in professional service, and by mainly considering the current status of smoking, they have been allocating a smoking cessation support time of at least 5 min per patient, focusing on the correlation that smoking has with dental disease and the dental oral cavity area. The number of dental clinics promoting smoking cessation in collaboration with non-dental fields is low. There is a need to nurture dental healthcare personnel to improve their skills in promoting smoking cessation. Also, it was shown that it is necessary to build a scientific rationale on the positioning of tobacco control and its effectiveness in dentistry, directed toward health insurance

coverage in the future.

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#### Conflict of interests

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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## <資料>

### 日本の歯科医療機関における禁煙支援に関する現状と課題

#### —多職種連携に基づくたばこ対策—

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#### 抄録

日本の歯科医療機関で行われている禁煙支援の現状を把握し、多職種連携によるたばこ対策を推進するうえでの課題を検討することを目的とした。歯科医師会のホームページ上で禁煙支援を行っていることを公開している歯科医療機関の院長を対象に、禁煙支援に関する質問票調査を、無記名、郵送法で2018年10月から同年11月に実施した。1,020歯科医療機関への発送に対して返送のあった406施設（回収率40.0%）のうち、有効回答である400施設分を解析対象とした。分析は、基礎集計、連携の有無別にみた二変量解析および多変量解析を行い、有意水準は5%未満とした。回答者の69.5%は歯科医師としての就業が30年以上であり、64.8%の施設において就業者数が5名以下だった。91.5%が現在の喫煙状況を把握し、69.8%が歯周病等の治療を目的に受診した患者を禁煙支援の対象としていた。1回の診療時、患者1名あたり禁煙支援に平均5分以上かけている施設が62.0%で、93.5%が喫煙と歯科口腔領域との関連を主眼とした支援をしていた。禁煙支援を実施するうえで問題があると回答した施設が46.3%で、その内容で最も多かったのは「禁煙支援が診療報酬に算定されない」で67.0%を占めた。一方で、禁煙支援に関する学習を特にしていない施設が30.8%であり、禁煙支援の実施に問題があると回答した施設の34.6%が「禁煙支援のスキルが不十分」をあげた。歯科以外と連携をして禁煙支援を実施している施設は11.8%にとどまり、そのうち91.5%が禁煙外来との連携をもち、医師と協働で行っていた。多職種連携に基づく禁煙支援に影響を与える要因は、主な支援内容の「具体的な支援方法」、把握事項の「累積喫煙本数の算出」、対象患者が「禁煙中」だった（ $p < 0.01$ ）。禁煙支援を実施している歯科医療機関の院長は就業年数が長く、主に現在の喫煙状況を踏まえ、歯科疾患や歯科口腔領域と喫煙との関連に着目した禁煙支援を、患者1名あたり5分以上かけて行っていた。歯科以外と連携をして禁煙支援を行っている施設は少なく、今後は禁煙支援に関する技能向上のための研修の促進と、歯科におけるたばこ対策の制度の拡充に向けたエビデンスの構築が必要である。

キーワード：歯科医療機関、禁煙支援、内容分析、多職種連携