Part IV

Efforts and examples relevant to oral frailty

Policy of the Ministry of Health, Labour and Welfare for 2040

In 2025, all baby boomers will be over 75 years old. In 2040, the ageing population will reach its peak. Furthermore, from 2025 to 2040, the decrease in the working generation will be a more serious issue than the increase in the elderly generation. To maintain a vibrant society, healthy life expectancy should be extended to lead a healthy social life regardless of age. At the Council on Economic and Fiscal Policy held in April 2018, the Japanese government set a goal of extending healthy life expectancy by at least 3 years by 2040 and narrowing the gap with the average life expectancy (Figure IV-1). However, there are some issues in the conventional health and care prevention projects, such as limitation or division of subjects due to differences in age and legal bases (Figure IV-2). To solve these issues, the Council of the Ministry of Health, Labour and Welfare considered creating a place for a population approach, not limited to frail elderly people, i.e., a place for interaction among all elderly people, by integrating the health and care prevention projects for the elderly, thus suggesting a certain policy (Figure IV-3).

To extend the healthy life expectancy, the prevention of lifestyle-related diseases and their aggravation are combined with health promotion at local communities. Furthermore, as a high-risk approach, a framework for integrating the care prevention and the frailty/oral frailty measures (oral cavity, exercise, and nutrition) has been proposed.

The "Report from the Expert Meeting on the Integration of Health Project and Care Prevention for the Elderly" includes recommendations for participation in the communities, including oral prevention menus by family dentists and referrals to dentists for elderly people suspected of having oral frailty as initiatives implemented mainly by municipalities (Figure IV-4). Thus, oral frailty is described in reports issued by the Ministry of Health, Labour and Welfare. Besides, local dental hygienists, as professionals, are also required to cooperate with physicians, public health nurses, and registered dietitians in the communities.

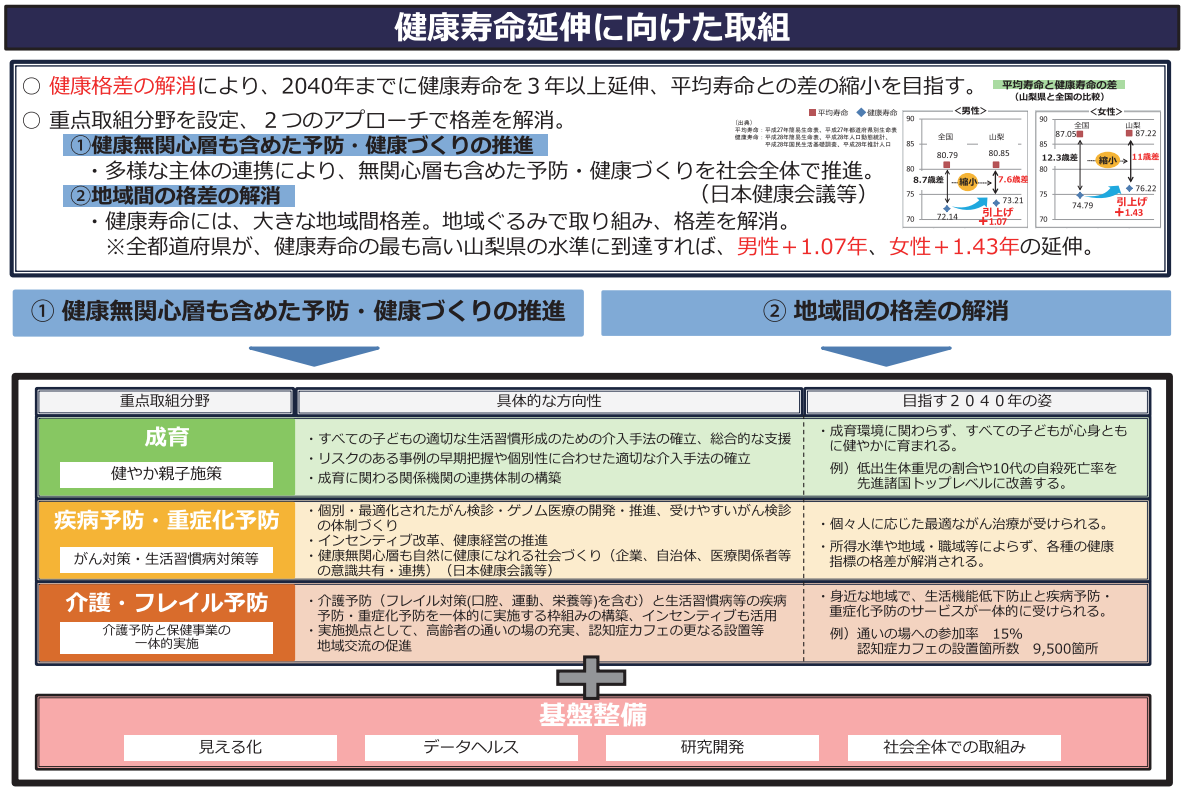


Figure IV-1. Efforts to extend the healthy life expectancy

Source: Report of the Council on Economic and Fiscal Policy submitted by Provisional Member Kato on April 12, 2018 (partially revised)

保健事業と介護予防の現状と課題（イメージ）

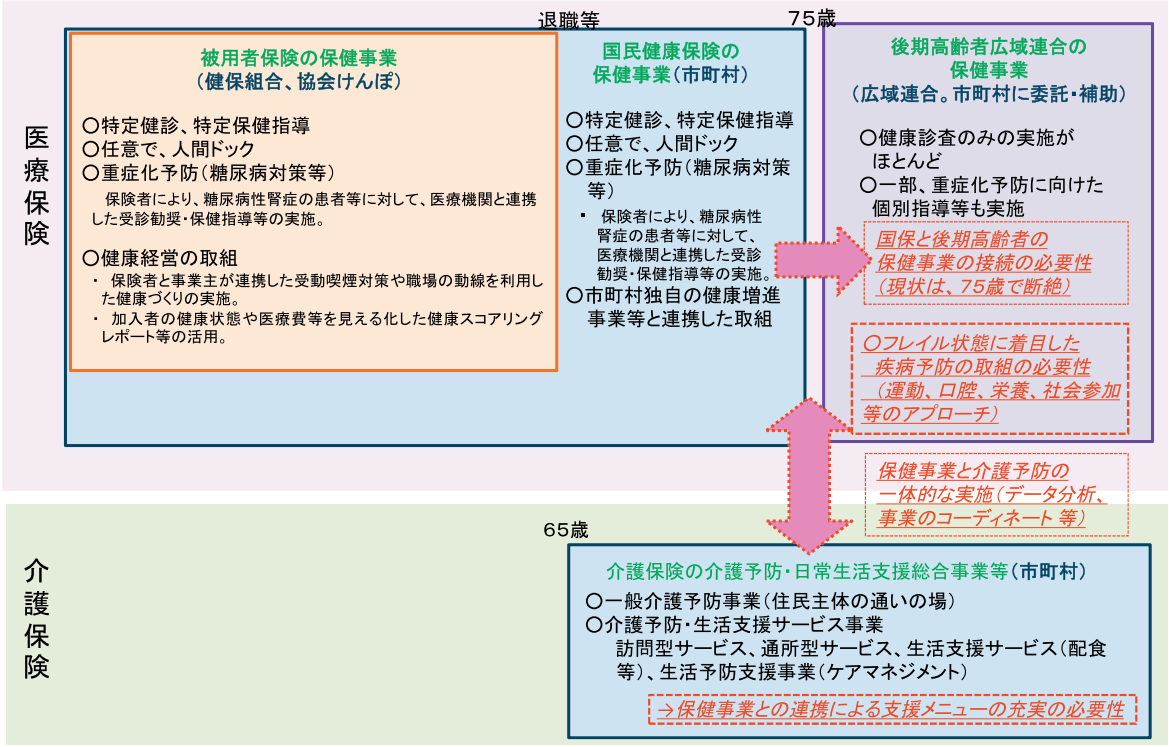


Figure IV-2. Current status and issues of insurance businesses and care prevention (image)

Source: Expert Meeting on the Integration of Health Services and Care Prevention for the Elderly on November 22, 2018

市町村における高齢者の保健事業と介護予防の一体的な実施について（イメージ図）

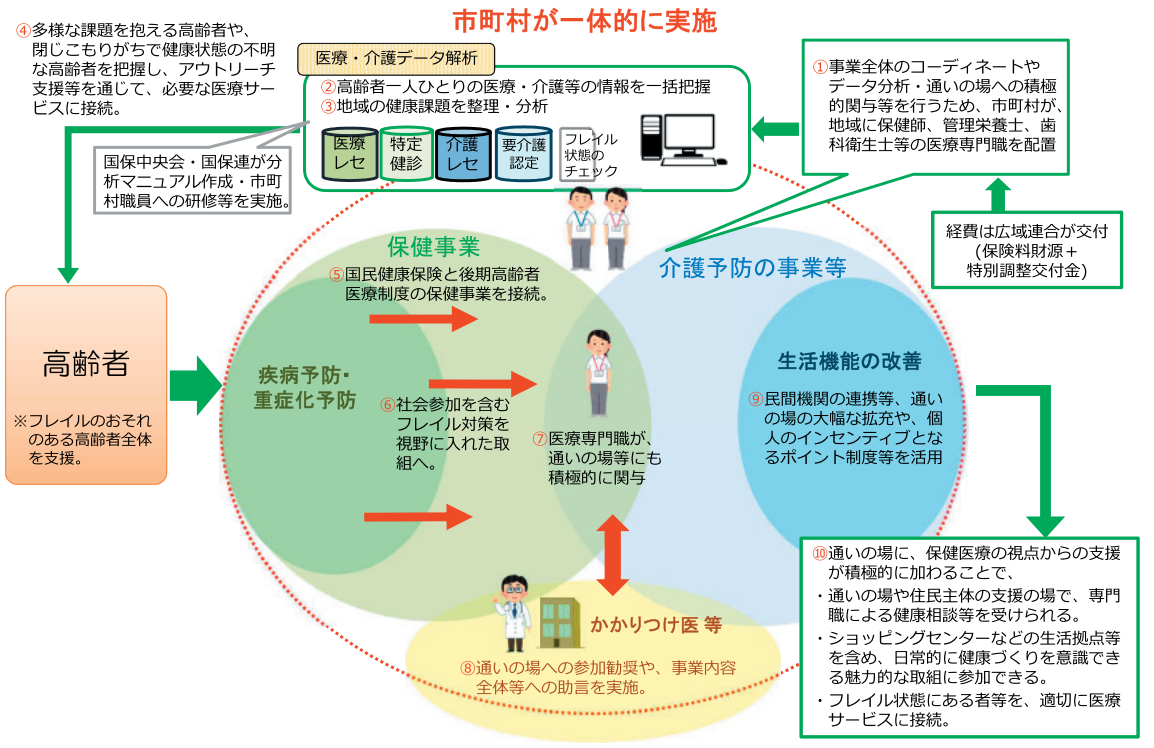


Figure IV-3. Integration of health services and long-term care prevention for the elderly in municipalities (image diagram)

Source: Expert meeting on the integration of health services and long-term care prevention for the elderly in municipalities on November 22, 2018

Report of the Expert Meeting on the Integration of Health Services and Care Projects for the Elderly

For example, besides recommendations of the integration of the overall projects in municipalities, various cooperations are possible, such as referrals of people with frailty, identified through outreach support, to appropriate medical services, referrals of people with oral frailty to dentists, and recommendations of participation in the communities, by family doctors. Thus, to enhance efforts for health services leading to care prevention, the relationship with family doctors should be adequately strengthened.

Figure IV-4. Oral frailty described in the report of the Ministry of Health, Labour and Welfare

Source: Excerpt from the Expert Meeting on the Integration of Health Services and Care Prevention for the Elderly by the Ministry of Health, Labour and Welfare

Efforts of prefectural dental associations for dental health examination for the latter-stage elderly

The prefectural wide area unions for the late-stage medical care system for the elderly (hereinafter referred to as "wide area unions") has launched and expanded its efforts for dental health examination for the latter-stage elderly for people aged 75 or above in cooperation with municipalities. Since 2014, dental health examination for the latter-stage elderly has been implemented with the support of the national treasury and implemented by each organization in some prefectures. As the support of the national treasury started, they became known in many prefectures and were implemented in 47 wide area unions and all prefectures in 2018. The relevant budget size in 2019 was 700 million yen (Figure IV-5).

In each prefecture, the dental associations have cooperated with the wide area unions, thereby promoting the efforts actively. The Japan Dental Association Research Institute contacted each dental association about the status of their efforts as of February 2018 and collected and examined the health examination sheets used in cooperation with the Community Health Division of the Japan Dental Association. Figures IV-6 and 7 show the results obtained in the 40 prefectures from February to May 2018.

Using health examination sheets, the number of teeth was surveyed in all prefectural dental associations, as well as the dental formula and the use of dentures in 39 prefectures (97.5%). Occlusion was examined in 31 prefectures and was classified according to Eichner's classification in some prefectures. The use of implants was examined in 22 prefectures. Periodontal diseases were checked in 39 prefectures. Assessments other than those with Community Periodontal Index were performed in 10 prefectures. Plaque adhesion was examined in 39 prefectures (97.5%), tongue coating in 32 (80%), and halitosis in 25 (62.5%). Besides, dry mouth and mucous membranes were checked in more than 80% of prefectures.

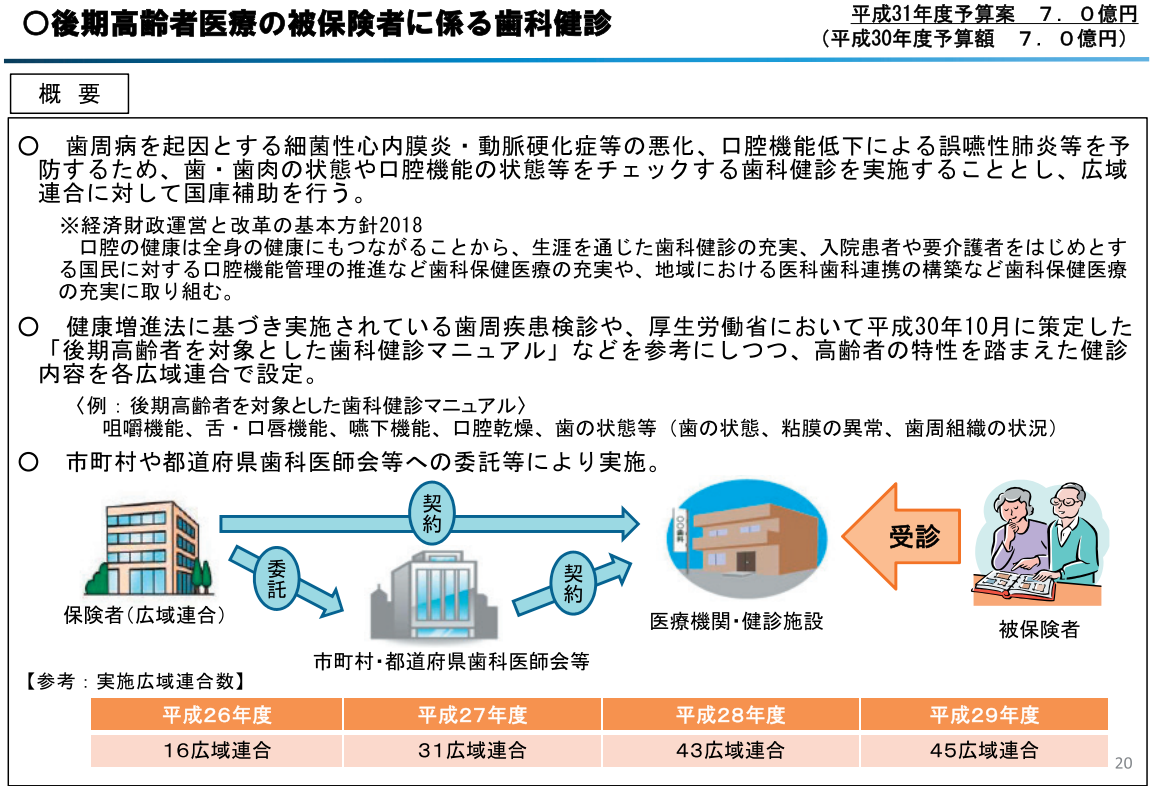


Figure IV-5. Outline of dental examinations for people subjected to the Late-stage Long-Term Care

Source: "Dental examinations for people subjected to the Late-stage Long-Term Care" by the Ministry of Health, Labour and Welfare

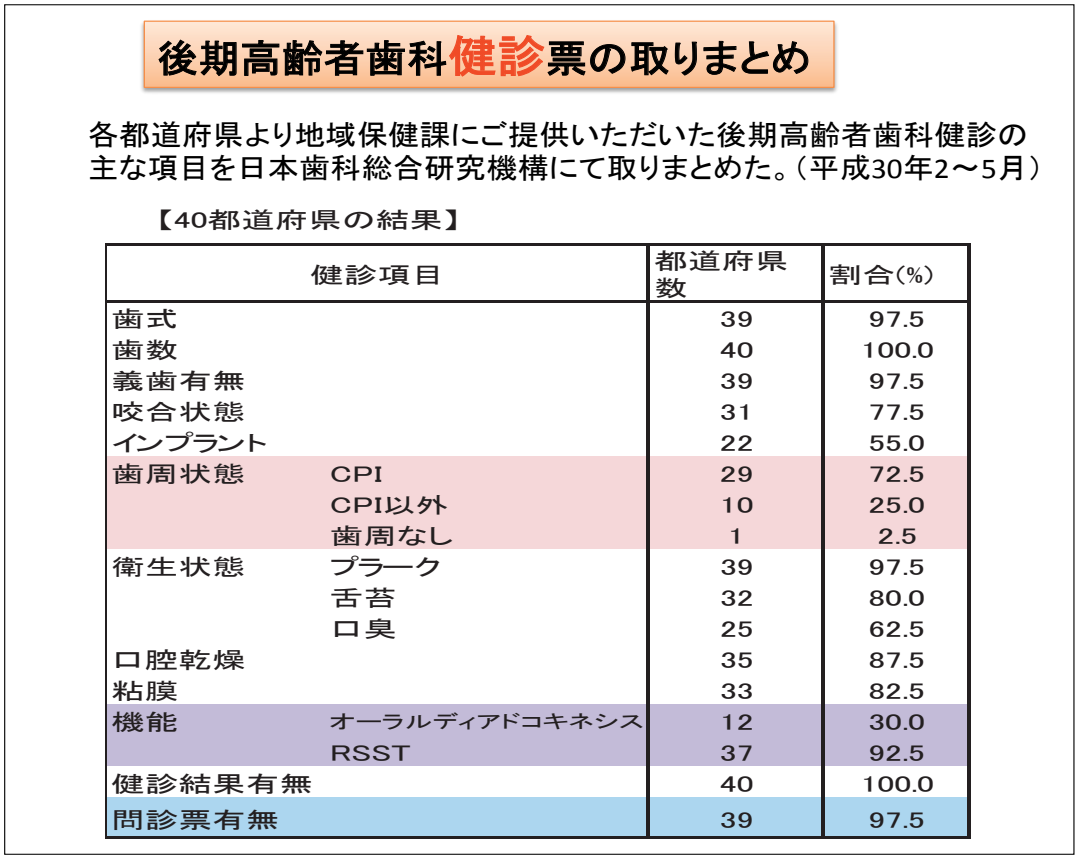
Regarding oral functions, a repetitive saliva swallowing test (RSST) was conducted in as many as 37 prefectures (92.5%) and oral diadochokinesis in 12 prefectures (30%).

Besides the test items shown in Figure IV-6, the conditions of the temporomandibular joint, cheek expansion, masticatory muscle palpation, and masseter muscle palpation were included in many prefectures. Saliva tests, such as salivary occult blood tests, were conducted in some prefectures, while EAT-10 and meal maps were prepared to reveal diets in others.

The interview sheet is shown in Figure IV-7. Oral concerns as subjective symptoms were asked in 36 prefectures (92.3%). They included halitosis, pain, bleeding, and occlusal disharmony. The number of teeth was asked in only six prefectures (15.4%). The three items of the basic checklist were included in the interview sheets in many prefectures (80%). Besides, the history of pneumonia, family structure, the number of outings, and the history of falls were included in some prefectures.

Thus, the contents of dental health examination for the latter-stage elderly varies with prefectures, suggesting that examination items and questions should be urgently standardized to some extent for data collection at the national level in the future.

The Ministry of Health, Labour and Welfare has already issued a manual on dental health examination for the latter-stage elderly as of October 2018. Many prefectural governments have already started their own efforts, precluding the immediate use of the same examination forms. However, since some essential items have been indicated, data should be collected on shared items at a certain time to accumulate evidence.



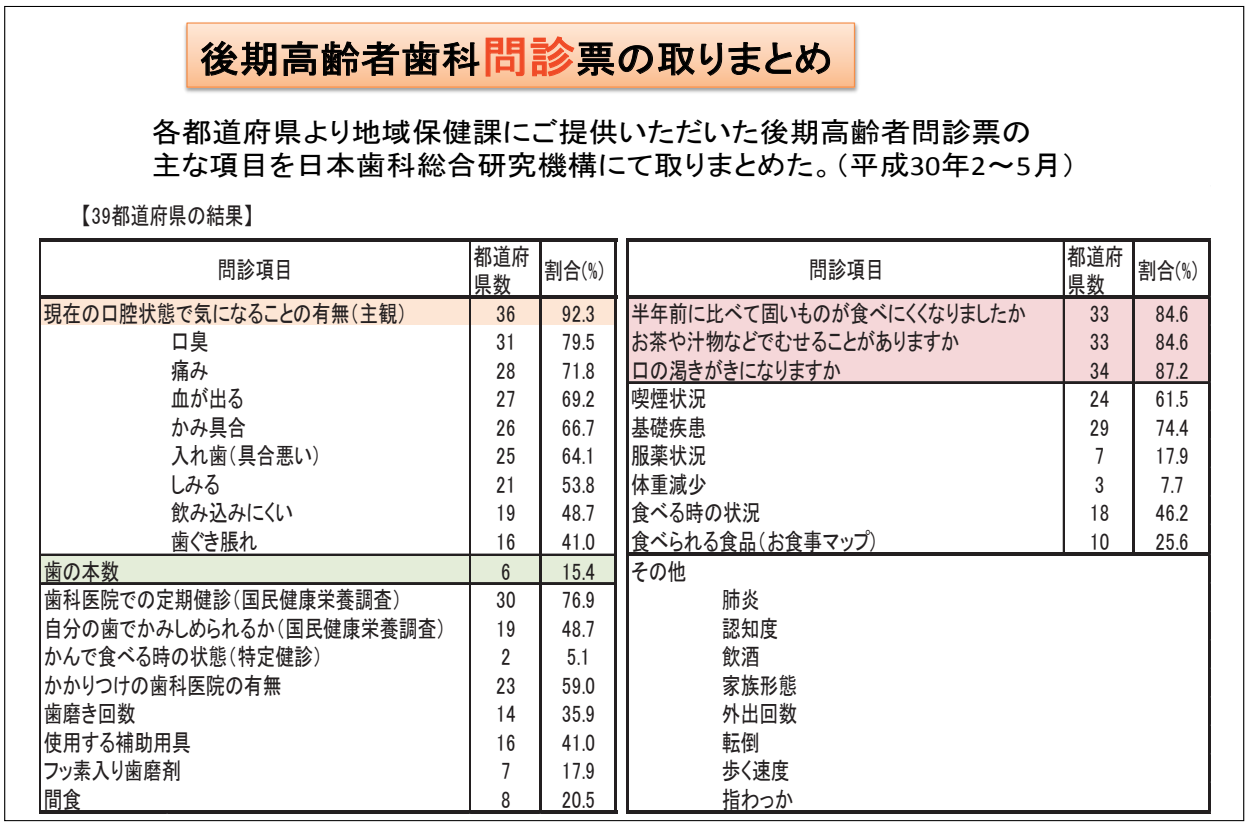
後期高齢者歯科健診票の取りまとめ

各都道府県より地域保健課にご提供いただいた後期高齢者歯科健診の
主な項目を日本歯科総合研究機構にて取りまとめた。（平成30年2～5月）

【40都道府県の結果】

健診項目		都道府県数	割合(%)
歯式		39	97.5
歯数		40	100.0
義歯有無		39	97.5
咬合状態		31	77.5
インプラント		22	55.0
歯周状態	CPI	29	72.5
	CPI以外	10	25.0
	歯周なし	1	2.5
衛生状態	プラーク	39	97.5
	舌苔	32	80.0
	口臭	25	62.5
口腔乾燥		35	87.5
粘膜		33	82.5
機能	オーラルディアドコキネシス	12	30.0
	RSST	37	92.5
健診結果有無		40	100.0
問診票有無		39	97.5

Figure IV-6. Compilation of dental health examination for the latter-stage elderly



後期高齢者歯科問診票の取りまとめ

各都道府県より地域保健課にご提供いただいた後期高齢者問診票の
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【39都道府県の結果】

問診項目	都道府県数	割合(%)
現在の口腔状態で気になることの有無（主観）	36	92.3
口臭	31	79.5
痛み	28	71.8
血が出る	27	69.2
かみ具合	26	66.7
入れ歯（具合悪い）	25	64.1
しみる	21	53.8
飲み込みにくい	19	48.7
歯ぐき腫れ	16	41.0
歯の本数	6	15.4
歯科医院での定期健診（国民健康栄養調査）	30	76.9
自分の歯でかみしめられるか（国民健康栄養調査）	19	48.7
かんで食べる時の状態（特定健診）	2	5.1
かかりつけの歯科医院の有無	23	59.0
歯磨き回数	14	35.9
使用する補助用具	16	41.0
フッ素入り歯磨剤	7	17.9
間食	8	20.5

問診項目	都道府県数	割合(%)
半年前に比べて固いものが食べにくくなりましたか	33	84.6
お茶や汁物などでむせることがありますか	33	84.6
口の渇きがきになりますか	34	87.2
喫煙状況	24	61.5
基礎疾患	29	74.4
服薬状況	7	17.9
体重減少	3	7.7
食べる時の状況	18	46.2
食べられる食品（お食事マップ）	10	25.6
その他		
肺炎		
認知度		
飲酒		
家族形態		
外出回数		
転倒		
歩く速度		
指わっか		

Figure IV-7. Complication of health examination for the latter-stage elderly sheets

Pioneering Efforts by Prefectural Dental Associations

On the first level, the activities of prefectural and city dental associations that have taken advantage of the population approach are described. Particularly, Shimane Prefecture, which started activities as an organization long ago while emphasizing food support for the elderly, and Kanagawa Prefecture, which has promoted initiatives in cooperation with prefectural dental associations, prefectural administration, and experts, are shown as examples.

COLUMN

Overview and future prospects of Dental Health Examination for the Latter-stage Elderly in Shimane Prefecture

(Latter-stage Elderly Dental Oral health examination: LEDO health examination)
Department of Health and Welfare, Shimane Dental Association

[Overview]

The Shimane Dental Association has started pioneering efforts since 2012, taking "measures to prevent malnutrition among the elderly" as a project commissioned by the prefectural government. Its goal is to conduct health examinations for the elderly at dental clinics and continue support by utilizing various professions and tools as a follow-up measure. Instead of connecting the communities to medical institutions, as indicated by the "Expert Committee on Integrated Implementation of Health Services for the Elderly and Care Prevention," which is being discussed by the Ministry of Health, Labour, and Welfare, dental clinics are connected to the communities.

1. Context

The Shimane Dental Association, which focused on the oral functions and nutritional intake of the elderly ahead of others, had implemented the "Project for the Prevention of Malnutrition in the Elderly," commissioned by Shimane Prefecture, for 5 years from 2012. The project included a literature review, nutrition survey using Mini Nutritional Assessment-Short Form (MNA®), gummy chewing test, oral function test, dietary survey using a brief-type self-administered diet history questionnaire, collaborative project with the Shimane Dietetic Association Nutrition Care Station, and other training projects. For details, see "Summary of the Project for the Prevention of Malnutrition in the Elderly, Japanese Journal of Gerodontology 33, 85-93 (2018)," a report on activities for 5 years by Saito et al. In response to the inquiries by the Wide Area Unions for the Late-stage Medical Care System for the Elderly (hereinafter referred to as "wide area unions") of Shimane Prefecture regarding dental health examinations in the health examination project subsidized by the late-stage medical care system for the elderly, the Later-stage Elderly Dental Oral health examinations (hereinafter referred to as "LEDO health examinations") could be established by utilizing the survey results obtained in the above "Project for the Prevention of Malnutrition in the Elderly."

2. Purpose

The purpose of this project is to contribute to the maintenance and promotion of the health and life functions of the elderly by providing dental and oral health examinations (dental health examinations, oral function assessments, and nutritional assessments) for those aged 75 and older to comprehend their oral conditions and functions and providing appropriate follow-up measures (treatment, health guidance, and collaborations with other professions).

3. Contents of the LEDO medical examinations

1. Nutritional assessment
   Measurements of body mass index (BMI) (height and weight) and leg circumference (muscle mass)
2. Assessments of the oral environment (causes of oral hypofunction)
   Teeth (number of the present teeth, treated/untreated teeth, and basal seat root stumps)
   Periodontal tissue (normal, mild/moderate/severe periodontitis, and edentulous jaw)
   Denture (fitting, implant, and degree of need)

Oral mucosa (no abnormality, follow-up required, and detailed examinations required)
Oral health (dental plaque, tongue coating, severity of halitosis, and cleanliness of dentures)
Dry mouth as a subjective symptom

3. Assessments of oral functions
   Masticatory ability (objective/subjective assessments)
   Swallowing function (modified RSST methods)
   Tongue functions (range of tongue movement and articulation)
4. Interview sheet
   Q1. Dental problems, Q2. Frequency of oral care, Q3. Presence of a family dentist, Q4. Medical examination history other than dentistry, Q5. Number of prescribed medicines, Q6. Satisfaction with meals, Q8. Speed of eating, Q9. Preparation of meals, Q10. Ingenuity for improving food ingestion, and Q11. Frequency of meat/fish intake. These items are checked efficiently by role-sharing arrangements between dentists and dental hygienists.

4. LEDO medical examinations

The following five items are introduced as being characteristic of the LEDO health examinations:

1. Nutrition
   BMI and CC were introduced as indexes to assess nutritional status and muscle mass, respectively.
2. Periodontal diseases
   Dentists assessed the progressions of periodontal diseases in the most progressed teeth in the oral cavity using mobility testing and visual inspection of the teeth for evaluation.
   Normal; mobility: 0, no redness, no tartar, no swelling, mild gingival recession, and no bleeding
   Mild; mobility: 0–1, mild redness, mild tartar, no swelling, gingival recession, and mild bleeding
   Moderate; mobility: 1–2, redness, tartar, swelling, gingival recession, and bleeding
   Severe; mobility 2–3, redness, tartar, swelling, gingival recession, bleeding, and drainage edentulous jaw
3. Masticatory ability test (objective assessment)
   Participants chew a piece of commercially available "Sugarless Fine Gummy®" (Fine Co., Ltd.) for 15 seconds (to the smallest as possible) and then spit it out into a paper cup or the like. At that time, pieces with a size of approximately > 3 mm are counted to determine a 15-second value for a gummy. The measurement is conducted with dentures on, if any.
4. Swallowing functions
   The time required for three consecutive dry swallowing is determined (normal ≤30 seconds) (modified RSST method).
5. Tongue functions
   Besides visual inspection of the tongue's range of motion (extend the tongue to the left, right, and forward as much as possible), the voluntariness of the tongue and related muscles are examined using a monosyllabic articulatory listening test for "pa," "ta," "ka," and "la" by reading "Panda No Takara."

5. Current status of the LEDO medical examinations

Consultation tickets have been mailed to the elderly aged 75–80 years, excluding long-term hospitalized or institutionalized elderly, since 2015 in all municipalities in Shimane Prefecture. In 2018, 231 dental institutions (86.5%) in the prefecture participated, and the target age was expanded from 75 to 85 years, resulting in a consultation of 8,138 people (consultation rate: 11.29%). The health examination period ranged from 6 to 12 months, depending on the municipality.

6. Subsequent measures for the LEDO health examinations

Subsequent measures for the LEDO health examinations are an important initiative for determining the degree of achievement of the health examinations. However, we face many hurdles, such as human resources, cost, patient's awareness, and information sharing among stakeholders, when considering when, who, where, and how to conduct health examinations. Therefore, the dental association is considering three steps. The first step is to unify the viewpoints of dentists and dental hygienists who conduct the health examinations. The second step is to disseminate information from the dental clinics, which conduct the health examinations, to related organizations and professionals. The third step is to share information with dental clinics and related organizations and professionals to support patients' home lives.

In 2015 and 2016, the first step was to familiarize dentists and dental hygienists with the health examination and share the purpose. The second year could be completed without major confusion. In 2017, the wide area unions provided municipalities with information on people with a BMI < 20 or a CC < 31 cm, as suspected of having malnutrition, from the health examinations to confirm the subsequent measures taken by the municipalities. As a result, of the 1,046 people suspected of having malnutrition, only 116 (11.1%) were subjected to some subsequent measures, suggesting the inadequacy of the local governments' measures. The measures should be gradually established, although those in 2018 have not yet been tabulated. The municipalities' opinions heard by the wide area unions were: (1) most of the municipalities are too busy with the existing programs; (2) some municipalities have not determined the department in charge of subsequent measures for the LEDO health examinations; and (3) the subsequent measures for the LEDO health examinations, including procedures, remain undetermined.

Even if the information was transmitted from dental clinics in the second step, the related organizations and professionals are not ready to receive the information, suggesting the necessity of education regarding the LEDO health examinations.

7. Information transmission from dental clinics after the LEDO health examinations (example)

- Cooperation with family doctors, nutritionists of governments, and public health nurses in cases of possible malnutrition;
- Cooperation with hospital dentistry when patient's medical history precludes regular dental treatment;
- Referral to advanced medical institutions (oral surgery) for pathological examinations
- Cooperation with specialized medical institutions when implant dentures are desired to restore masticatory functions;
- Cooperation to comprehend nutritional intake through dietary survey and provide support to maintain nutrition when masticatory ability may not be fully restored by dental treatment for low biting force;
- Cooperating with facilities and professionals (e.g., speech-language pathologists) capable of performing tests, treatment, and guidance regarding swallowing;

- Information sharing by an integrated community care system, including communication by family members and neighbors, day services, and oral care interventions at daycare, when oral care by patients may be limited; and
- Dry mouth, dysgeusia, and tongue pain are caused by diverse factors, including psychological problems, drugs, and organic lesions. Most patients are anxious about the symptoms and should be followed up by thorough examinations at a higher medical institution.

8. LEDO health examinations and oral hypofunction

Since 2018, "oral hypofunction" has been newly added as a disease name covered by dental insurance.
Oral hypofunction is diagnosed when three or more of the following conditions are observed: poor oral health, dry mouth, decreased occlusal force, decreased tongue-lip motility, low tongue pressure, decreased masticatory function, and decreased swallowing functions.

The items of the LEDO health examinations, i.e., "nutrition," "tooth conditions," "periodontal diseases," "gingival mucous membrane," "dentures," "masticatory ability," "tongue movement and speech clarity," "swallowing functions; modified RSST methods," "oral health," and "dry mouth and oral sensation," mostly overlap with the diagnostic criteria for oral hypofunction.

If oral hypofunction is suspected after the LEDO health examinations, oral functions should be thoroughly examined as a part of treatment and diagnosis, covered by dental insurance, for the diagnosis, treatment, and management of "oral hypofunction" (reinforcing the first step).

9. LEDO health examinations and integrated community care system

The Shimane Dental Association is promoting the project for medical examinations to play a central role in establishing a integrated community care system. "Food support" is an important field where dental care can contribute to the lives and health of local residents. The subsequent measures for health examinations should be reviewed in the community and among dental personnels. Therefore, the officials of local governments and the leaders of professional organizations gathered under the initiatives of the dental association in each district to hold a "Community-based Integrated Oral Care Conference" to solve issues of the medical care and daily life of the elderly in each district.

At the end of the fiscal year, the Shimane Dental Association gathered representatives from the dental associations of each district in the prefecture to hold a "Community-based Integrated Oral Care Liaison Conference" mainly for information exchange. Specifically, in Matsue City, those with oral hypofunction in the LEDO health examinations are encouraged to participate in the "Oral Health Classroom" project for general care prevention at dental clinics, which has been implemented by the Matsue City Dental Association, to receive an oral function improvement program or general nutrition classrooms for the elderly to learn about the prevention of malnutrition. Since 2018, Matsue City has started a project to prevent the decline in physical and mental functions due to malnutrition and muscle weakness and to prevent serious illnesses, such as lifestyle-related diseases, as a model project for the prevention of malnutrition and serious illnesses by sending nutritionists and other professionals to those with malnutrition tendencies, observed in the LEDO health examinations, to provide health guidance. Gotsu City also started a project to send a leaflet to all patients with malnutrition to send a pair of dental hygienists and a dietitian to provide nutrition and oral care guidance on request and report the results of the guidance to medical institutions. Leaflets prepared through consultations with the city medical and dental associations are sent to raise awareness even for those who do not need a visit. In other cities, towns, and

villages, public health nurses and nutritionists also visit to provide nutritional guidance based on the information provided by the wide area unions. Additionally, Ounan-cho has set up a contact point to collect information on the LEDO health examinations from dental clinics to share the information at care conferences.

The Shimane Dental Association is willing to develop the Later-stage Elderly Dental Oral (LEDO) health examinations of Shimane Prefecture regarding oral hypofunction and prevention of malnutrition and serious illnesses in the elderly at home-bound dentistry and home, for which dentists should take responsibility amid the urgent need to establish a integrated community care system.

10. Statistics of the LEDO health examinations

LEDO health examinations in 2016

Table IV-1. Nutrition (1)

	BM<18.5	BM<18.5-25	BM>25
Male	174(6.29%)	1986(71.65%)	607(21.94%)
Female	400(10.51%)	2682(70.45%)	725(19.04%)

Table IV-2. Nutrition (2)

	CC≧30	CC<30
Male	2582(93.31%)	185(6.69%)
Female	3107(81.61%)	700(18.39%)

Table IV-3. Periodontal diseases (excluding edentulous jaws)

	Normal	Mild	Moderate	Severe
Male	617(23.9%)	1094(42.4%)	781(30.2%)	90(3.5%)
Female	856(24.7%)	1521(43.9%)	1002(28.9%)	83(2.4%)

Table IV-4. Masticatory ability test (objective assessment of masticatory ability)

Distribution of gummy divisions after chewing for 15 seconds		
	Number of	%
Low-low masticatory ability (1 division)	711	10.8
Low-moderate masticatory ability (2-7 divisions)	1363	20.7
Low-high masticatory ability (8-14 divisions)	1403	21.3
Normal masticatory ability (15-21 divisions)	1187	18.1
High masticatory ability (22 divisions or more)	1910	29.1

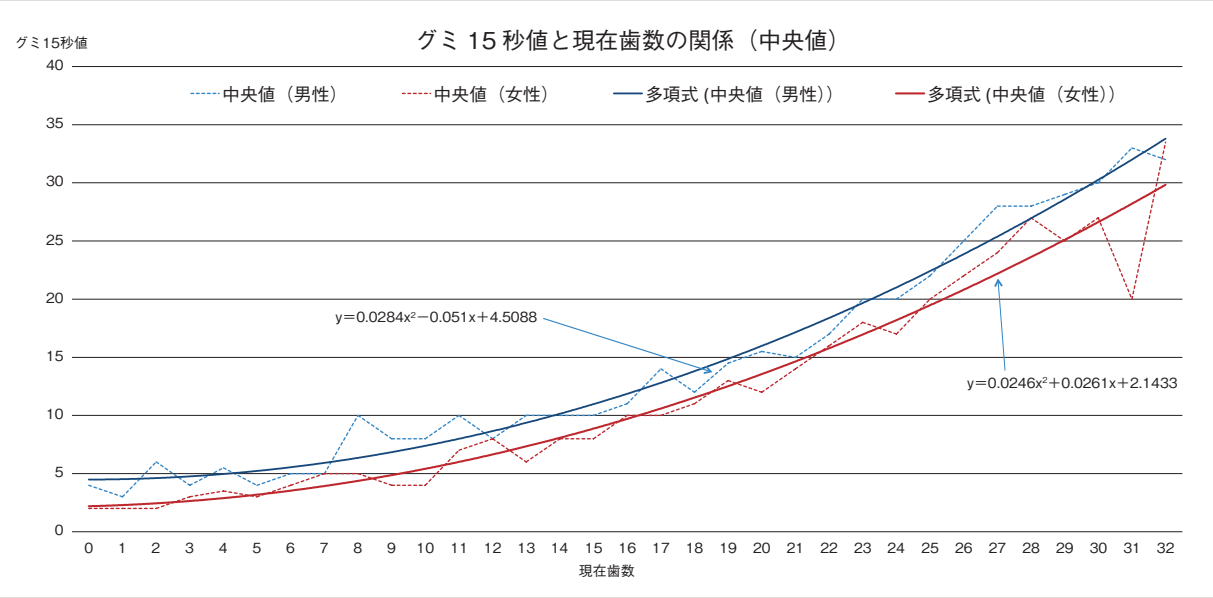

Figure IV-8. Relationship between gummy divisions after chewing 15 seconds and the number of present teeth (median value)

Table IV-5. Estimates of gummy divisions after chewing 15 seconds from the number of present teeth

Current number of teeth	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Estimated gummy divisions (male)	4.5	4.5	4.5	4.6	4.8	5.0	5.2	5.5	5.9	6.4	6.8	7.4	8.0	8.6	9.4	10.1	11.0
Estimated gummy divisions (female)	2.1	2.2	2.3	2.4	2.6	2.9	3.2	3.5	3.9	4.4	4.9	5.4	6.0	6.6	7.3	8.1	8.9
Number of present teeth	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
Estimated gummy divisions (male)	11.8	12.8	13.8	14.8	16.0	17.1	18.4	19.6	21.0	22.4	23.8	25.3	26.9	28.5	30.2	32.0	
Estimated gummy divisions (female)	9.7	10.6	11.5	12.5	13.5	14.6	15.8	16.9	18.2	19.5	20.8	22.2	23.6	25.1	26.6	28.2	

Table IV-6. Swallowing functions (modified RSST method)

	<15 seconds	15-30 seconds	>30 seconds
Male	1610(58.19%)	956(34.55%)	201(7.26%)
Female	1779(46.73%)	1607(42.21%)	421(11.06%)

Table IV-7. Tongue functions

	Unsatisfactory	Satisfactory
Tongue movements	99(1.5%)	6475(98.5%)
Pa	26(0.4%)	6548(99.6%)
Ta	80(1.2%)	6494(98.8%)
Ka	62(0.9%)	6512(99.1%)
Ra	78(1.2%)	6496(98.8%)

11. Prospects for the LEDO medical examinations

The Shimane Dental Association and the wide area unions planned to revise the LEDO health examination sheet (Figure IV-9), interview sheet (Figure IV-10), and LEDO health examination manual in 2019. In the elderly, functional and reserve capacity declines occur simultaneously. Additionally, illnesses cause a gradual loss of healthy life expectancy. Even in dental practice, the whole body and the oral cavity should be examined through oral functions. Besides CC, grip strength measurement should be included in the LEDO health examinations to establish a system that allows the simple diagnosis of sarcopenia.

Information should be disseminated more actively to be shared with related professions and organizations, and relevant systems should be actively created. Particularly, cooperation with dietitians is being promoted to support the dietary habits of the elderly, thus establishing a more multidimensional support system.

後期高齢者歯科口腔健康診査票

案

保険者名：島根県後期高齢者医療後期連合　　実施年月日：　年　月　日　記入者

被保険者番号			医療機関コード	
氏名		男・女	生年月日	昭和　年　月　日（　歳）
住所	（〒　－　）		TEL	（　）　－
			返却確認	

1. 栄養状態

身長　m　体重　kg　BMI　　下腿周囲長（CC）　cm（右・左）　握力　kg（右・左）

①栄養状態は基準値以上です　　**②低栄養の可能性あり**

2. 歯の状態

動揺																	動揺
右上																	左上
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	
右下																	左下
動揺																	動揺

記入にあたり用いる記号;
健康な歯：/　治療ずみの歯：○　むし歯：C　未治療で欠損している歯：△　歯の動揺（0；正常　1；軽度　2；中等度　3；重度）
歯の修復方法；[FD（総義歯）、PD（部分義歯）、Im（インプラント）、Br（ブリッジ）]

✧ 健康な歯（/）（　本）　むし歯を治療した歯（○）（　本）　**むし歯（C）（　本）**　合計（現在歯数）（　本）
✧ 入れ歯（ブリッジやインプラントも含む）で治療した歯（　本）　**入れ歯治療が必要な歯（△）（　本）**
✧ 床下残根（義歯の下になっている歯根）（　本）

3. 歯周病の状態

①健康な歯ぐきです　②軽度な歯周病　**③中等度な歯周病**　**④重度な歯周病**　⑤歯がありません

4. 舌、頬、歯肉粘膜の状態

①問題無し　②経過観察が必要です　**③精密検査が必要です**

5. 入れ歯の状態（義歯にはインプラント義歯も含みます）

上あご（①義歯の必要なし　②義歯の適合良好　**③義歯調整・修理または製作が必要**）
下あご（①義歯の必要なし　②義歯の適合良好　**③義歯調整・修理または製作が必要**）

6. 咀嚼能力（噛む能力）　グミ 15 秒値　個

①十分（22 分割以上）　②標準（15-21 分割）
③若干弱い（8-14 分割）　**④弱い（2-7 分割）**　**⑤かなり弱い（1 分割；噛み切れなかった）**

7. 舌の動き（舌可動域）　①良好　**②不良**

8. 言葉の明瞭度；パ；①良好　**②不明瞭**　タ；①良好　**②不明瞭**　カ；①良好　**②不明瞭**　ラ；①良好　**②不明瞭**

9. 食べ物を飲み込む能力　3 回の連続嚥下に要する時間　秒

①問題無いようです　**②若干心配があります**

10. お口の衛生状態

①良好です　**②注意が必要です**　**③あまりよくありません**　**④大変汚れています**

11. 口腔乾燥感・口腔感覚

①問題ないようです　**②味覚異常や乾燥感がある場合、偏食、貧血、薬などが関係している場合があります**

総合判定

①現在の状態を維持しましょう　**②かかりつけ歯科医院での歯科治療が必要です**

健診結果により、お住まいの市町村の健康づくり担当課から連絡することがあります。

Figure IV-9. Dental Health Examination for the latter-stage elderly examination sheet (Draft)

後期高齢者歯科口腔健康診査問診票 案

保険者名　島根県後期高齢者医療広域連合　　氏名＿＿＿＿＿＿＿＿＿＿

Q1　この半年で体重が 2～3kg 以上減少しましたか　1. いいえ　2. はい

Q2　現在ご自分の歯や口の状態で気になること（困りごと）はありますか。以下の困りごとの中から該当する番号全てに丸印（○）をつけて下さい

1. 困りごとは無い　2. 噛み具合が悪い　3. 外観が気になる　4. しゃべりにくい　5. 口が乾燥する　6. 口臭
7. 食事や歯磨きで痛みがある　8. お茶や汁物でよくムセル　9. 食べ物が挟まる　10. 入れ歯の問題
11. 出血する　12. 舌が痛む　13. 味覚が低下した　14. その他（　　）

Q3　現在治療を受けている病気を教えてください（該当するもの全てに丸印（○）をつけて下さい）

1. 健康なので通院していない　2. 高血圧　3. 糖尿病　4. 脳卒中　5. 心臓病　6. がん　7. 肺の病気
8. 骨粗鬆症　9. 腰・膝関節痛　10. その他（　　）

Q4　歯磨きや義歯の手入れは一日に何回くらいしますか（以下の質問では丸印（○）は一つのみです）

1. 1 回　2. 2 回　3. 3 回以上　4. しない

Q5　健康のために定期的にかかりつけ歯科医院にかかっていますか

1. 定期受診している　2. 定期受診していない

Q6　本日はどうやって来院されましたか

1. 歩いて　2. 自転車　3. 車を運転して　4. 家族の送迎　5. 知人の送迎　6. バス・電車　7. タクシー

Q7　毎日飲んでおられる薬の種類は何種類ですか

1. 1 種類～4 種類　2. 5 種類　3. 6 種類以上　4. 飲んでいない

Q8　食事はおいしいですか

1. おいしい　2. 普通　3. あまりおいしくない

Q9　なんでも噛んで食べることができますか

1. なんでも噛むことができる　2. 噛めない物がある

Q10　夕食を囲む人数はご自分も入れて何人ですか

1. 一人　2. 二人　3. 三人　4. 四人以上

Q11　家族や周囲の人と一緒に食事をするときに周囲の人と同じように食事が出来ますか

1. 周囲の人より速くできる　2. 同じくらい　3. 遅くなって同じように出来ない

Q12　食事のしたく（調理）をしますか

1. 毎日する　2. 時々する　3. しない

Q13　肉や魚を食べる頻度はどのくらいですか

1. 毎日食べている　2. 一週間に 3 回くらい　3. 一週間に 1 回くらい　4. 食べない

Q14　この健診について、どうやって知りましたか（該当するもの全てに丸印（○）をつけて下さい）

1. 受診案内　2. 市町村の広報　3. 歯科医からの紹介　4. かかりつけ医からの紹介（歯科医以外）
5.家族・知人からの紹介

Table IV-10. Interview sheet for dental health examination for the latter-stage elderly (Draft)

COLUMN

Oral frailty measures in the "improvement of pre-symptomatic diseases," promoted by the Kanagawa Prefectural Government

Tetsuro Sato, Council of Kanagawa Dental Association
Kazuko Nakajo, Odawara Public Health and Welfare Center, Kanagawa Prefectural Government

[Overview]

In Kanagawa Prefecture, in advance of other prefectures, oral frailty measures have traditionally been examined by the Kanagawa Prefectural Government, dental associations, and experts. Besides, in line with the declaration of improvement of pre-symptomatic diseases by the prefectural governor, the effectiveness of the oral frailty improvement program has been systematically verified, and the development of public relations project for disseminating information to citizens in an easy-to-understand manner has been promoted. This project is currently in progress. Attention should be paid to such movements because they will be accelerated in various places in the future.

1. Declaration for the Improvement of Pre-Symptomatic Diseases in Kanagawa Prefecture

The Kanagawa Prefectural Government is promoting a policy called "Healthcare New Frontier" for the transition to a sustainable society by addressing the issues of a super-ageing society. This policy advances two approaches, i.e., "pursuing state-of-the-art medical care and the latest technology" and "improving pre-symptomatic diseases," simultaneously by utilizing the advantages of Kanagawa Prefecture, where state-of-the-art medical care is provided, and research and development of the latest technology are conducted, to extend healthy life expectancy, produce new markets and industries, and create a new social system.

"Pre-symptomatic diseases," one of the major initiatives of the Healthcare New Frontier, do not separate the conditions of "health" and "disease" but rather indicate the process of continuous mental and physical changes between "health" and "disease." Furthermore, "improvement of pre-symptomatic diseases" means not only preventing specific diseases but also bringing the body and mind closer to a healthier state (Figure IV-11).

In March 2017, the Kanagawa Prefectural Government announced the "Declaration for the Improvement of Pre-Symptomatic Diseases in Kanagawa Prefecture" to encourage people of all ages to improve pre-symptomatic diseases by themselves, promoting efforts depending on life stages using three approaches, i.e., diet, exercise, and social participation. Of these, oral frailty measures are included in the dietary approach together with nutrition (Figure IV-11).

Representative initiatives based on the declaration of improvement of pre-symptomatic diseases include the establishment of "pre-symptomatic disease centers," which allow visualization and consultations regarding health conditions to obtain knowledge and information on diet and exercise in cooperation with municipalities in the prefecture. As of July 2018, there are 33 centers. Besides, as measures for pre-symptomatic diseases in "frailty," i.e., decreased mental and physical activities (e.g., muscular strength, cognitive function, and connection with society) with ageing, "Frailty Check," which allows people to recognize the signs of frailty by themselves, and training of "Frailty Supporters," who will lead the program, are provided in cooperation with the municipalities in the prefecture and Institute of Gerontology, The University of Tokyo. As of July 2018, the "Frailty Check" Project has been implemented in 10 municipalities.

Besides the "Frail Check" Project, the Kanagawa Prefectural Government is also taking various measures to prevent pre-symptomatic diseases depending on life stages, such as measures for pre-symptomatic diseases in children and young women, measures for lifestyle-related diseases, such as diabetes, in middle-aged and elderly people, and measures for care prevention and mild cognitive impairment, in cooperation with municipalities, organizations, and companies.

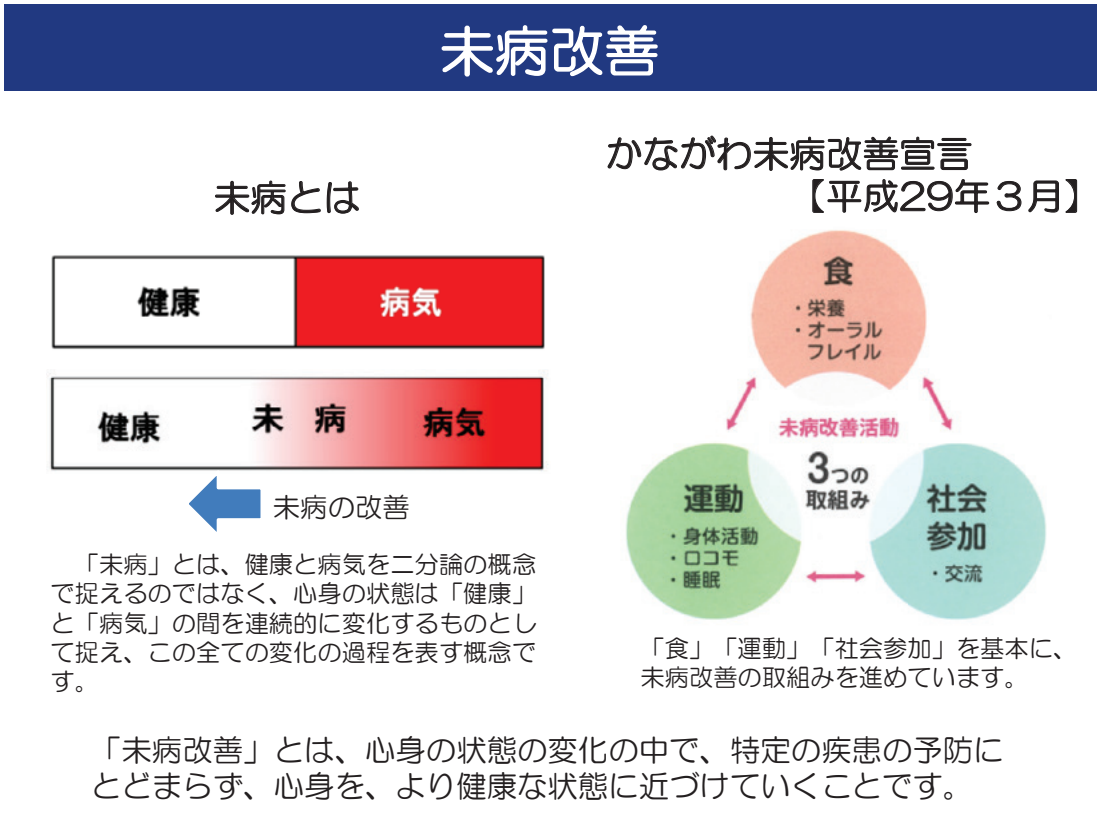

Figure IV-11. Improvement of pre-symptomatic diseases

In the field of dentistry, besides the 8020 Campaign, oral frailty measures are taken as dental and oral health promotion for improving pre-symptomatic diseases.

2. Enforcement of the Dental and Oral Health Promotion Ordinance in Kanagawa Prefecture and the training project of 8020 Campaign promoters

In 2011, the Kanagawa Prefectural Government promoted the 8020 Campaign with a recognition of the importance of comprehensive dental and oral health promotion throughout the lives of all people, including infants and the elderly; thus, enacting and enforcing the "Dental and Oral Health Promotion Ordinance in Kanagawa Prefecture."

After the enforcement of the ordinance, to address the growing need to further promote dental health measures, the training and activity support for "8020 Campaign promoters," who play a role in health promotion through the popularization of Oral Health Exercise, have been provided since 2011 to maintain and improve oral functions in 28 municipalities under the jurisdiction of 9 health and welfare offices in Kanagawa Prefecture, as one of the basic measures of the ordinance, "supporting volunteer activities related to dental and oral health promotion," in cooperation with related organizations, such as municipalities and the Kanagawa Dental Association (currently 26 municipalities under the jurisdiction of 4 health and welfare offices and 4 centers, because Chigasaki City has become an ordinance-designated city of public health center since April 2017). To support residents who are willing to live in familiar places, communities utilizing their entire social capital should be developed to improve pre-symptomatic diseases. The presence and activities of the 8020 Campaign

promoters will be even greater assets for the communities in the future. In 2018, the 8th year after the start of the project, two training sessions, education sessions at each health and welfare office and center, and a meeting for the promoters to exchange information were held.

Until now, 1,335 promoters have received training, with approximately 50,000 people involved in the oral health exercise as of 2017. Thus, various activities are actively implemented in the region.

As described above, besides the 8020 Campaign, Kanagawa Prefecture has already promoted initiatives for maintaining and improving oral functions before the appearance of the term "oral frailty."

Furthermore, in April 2019, the 8020 Campaign promoters have been renamed "oral frailty oral health promoters (8020 Campaign promoters)" to further promote their efforts.

3. Revision of the ordinance for dental and oral health promotion in Kanagawa Prefecture and the Concept of Oral Frailty

In March 2018, 6.5 years after its enforcement in 2011, the Kanagawa Prefectural Government revised the ordinance for dental and oral health promotion and newly added improvement of pre-symptomatic diseases as a basic principle and promotion of oral frailty measures as a basic policy. This was the first time in Japan that oral frailty measures were enacted in the ordinance. This is because neglecting minor deterioration of oral functions in the elderly (decreased tongue sliding, spilled food, slight choking, and increase in unchewable foods) has been demonstrated to increase the risk of long-term care, as revealed by recent studies. Additionally, deterioration of oral functions has been referred to as "oral frailty." Thus, although the use of this term in laws and regulations is limited because the concept of oral frailty has not yet been established nationwide, the oral frailty measures according to the prefectural ordinance are defined as "measures for quickly identifying and restoring oral frailty, which deteriorates mental and physical functions, and preventing such conditions."

Furthermore, according to the detailed concept described in the handbook for dental personnels, published at the same time as the revision of the ordinance in Kanagawa Prefecture, "even minor oral troubles in everyday life (decreased tongue sliding and increase in unchewable foods, and choking), if left untreated (or neglected), decrease appetite and food diversity and further deteriorate oral functions (decreased occlusal force and tongue movements) and increase the risks of malnutrition, sarcopenia, and eventually impairing eating functions. Such a series of phenomena and processes is called oral frailty." The conceptual diagram of oral frailty, proposed by Suzuki, Iijima, Hirano, Obara, Kikutani, Watanabe, et al., was revised in 2018 by the Kanagawa Oral Frailty Project Team that included these persons as members (Figure IV-12). Specifically, according to the revised concept, poor oral health, missing teeth, ill-fitting dentures, polypharmacy, dementia, and oral hypofunction, which cause eating dysfunction, all constitute oral frailty.

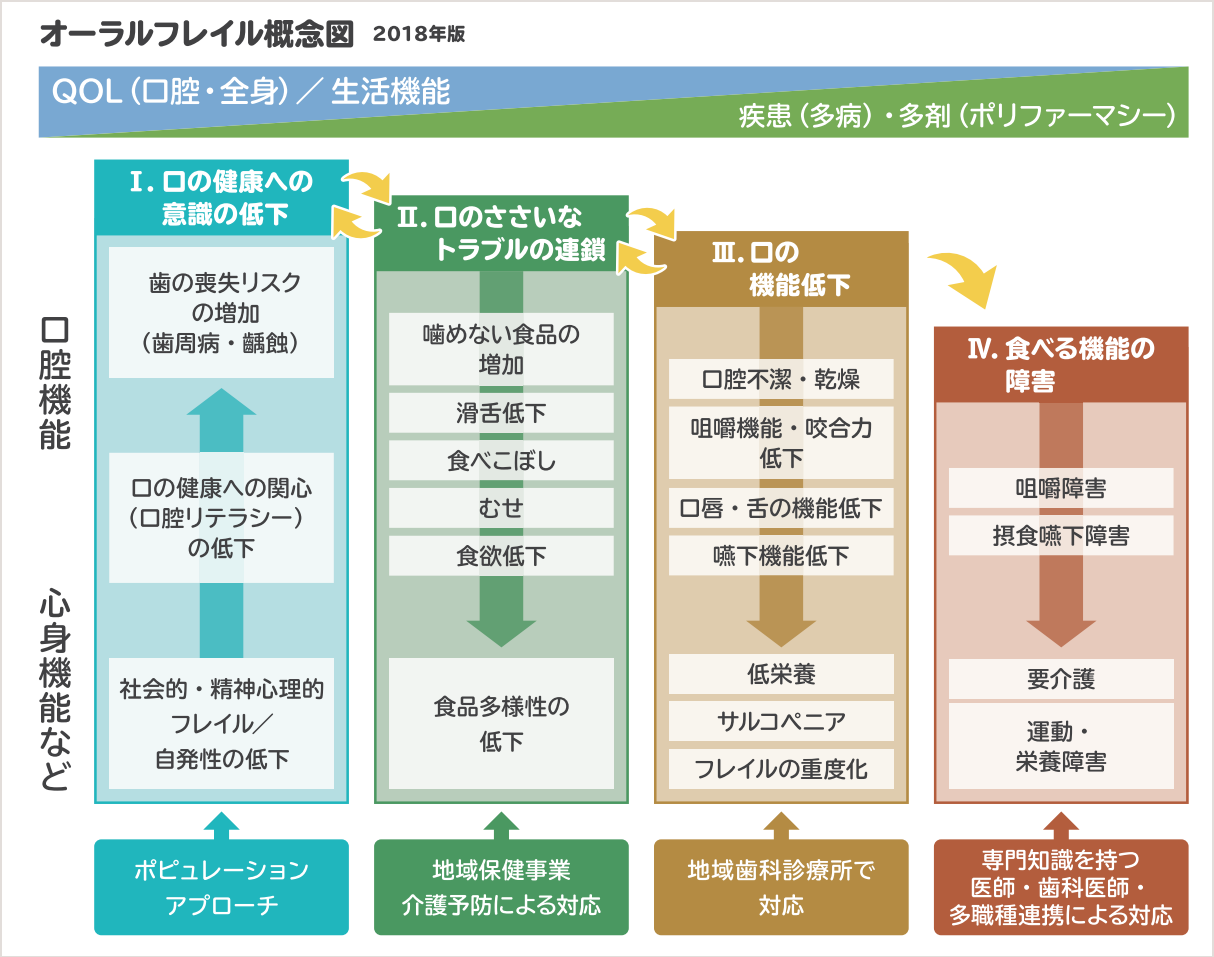

Figure IV-12. Conceptual diagram of oral frailty in 2018

Source: Katsuya Iijima, Hirohiko Hirano, Tetsuro Sato, et al., Kanagawa Oral Frailty Project Team
"Oral Frailty Handbook" by the Kanagawa Dental Association

4. Oral Frailty Measures Project in Kanagawa Prefecture

Regarding the frailty measures, which had been taken since 2014 in Kanagawa Prefecture, the lack of literacy about oral health was focused on as a major factor for frailty in the early stages. Therefore, a "project to extend healthy life expectancy through oral care," specializing in oral frailty, was started in 2016, before the revision of the ordinance. The Kanagawa Dental Association, dental and medical researchers, and the Kanagawa Prefectural Government collaboratively set up a workshop, which played a central role in the oral frailty measures in Kanagawa Prefecture.

To comprehend the actual state of oral frailty in 2016, 3,297 people aged 65 or above, visiting a dental clinic or living in an elderly care facility, falling from "independent" to "in need of support or long-term care," were surveyed. Physical examinations (height, weight, BMI, CC, and medical history), a questionnaire survey on 38 items related to lifestyle habits (with items on oral literacy added to the basic checklist of the Ministry of Health, Labour and Welfare and the 11-check of the University of Tokyo), tooth and gum examinations, and detailed oral function tests (movements, swallowing, and mastication) were implemented. As a result, approximately 40% of the elderly in Kanagawa Prefecture had oral frailty (24.1% for those visiting a dental clinic and 67.2% for those living at an elderly care facility or receiving home care) (Figure IV-13, 14, 15).

In 2017, the second year of the project, an oral frailty improvement program was created based on the survey results in the previous year. Subsequently, approximately 200 people with oral frailty in the survey were examined to verify the effectiveness of the program (Figure IV-16). At the initial examination, dentists examined the participant's tongue sliding, tongue pressure, and mastication. Depending on the results, personalized programs combining mouth opening, tongue pressure, syllable chain, and chewing training were provided to those with oral frailty. The participants were regularly reexamined to receive instructions at a dental clinic for 3 months while the program was implemented daily at home. As a result, the weights and fat percentages significantly increased after the implementation of the program, and the measurements of tongue sliding, tongue pressure, swallowing, and mastication were improved, resulting in decreased items indicative of oral frailty (Figure IV-17).

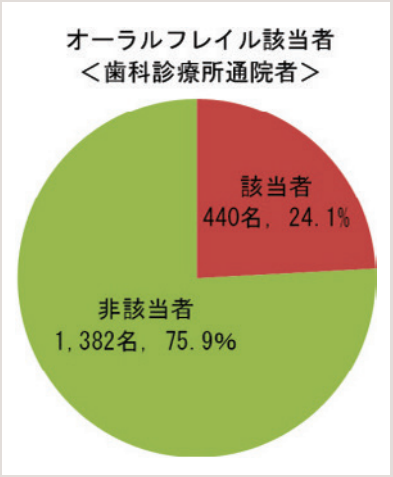

Figure IV-13.
Elderly people with oral frailty
(visiting a dental clinic)

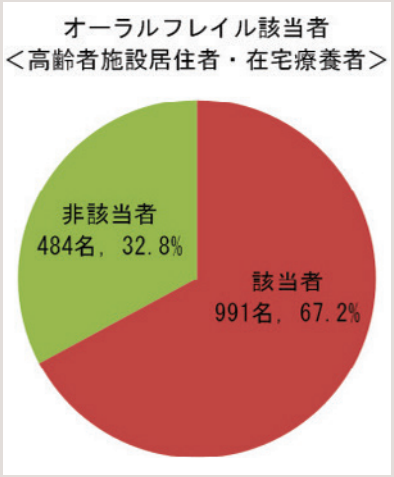

Figure IV-14.
Elderly people with oral frailty
(living at an elderly care facility)

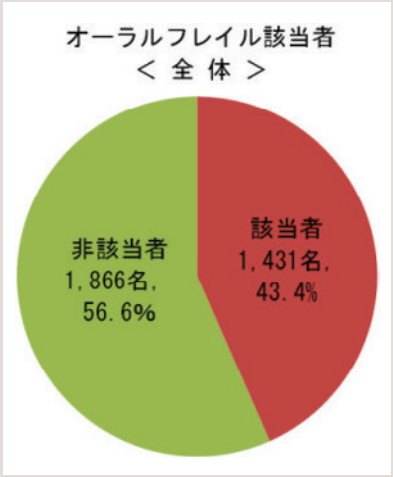

Figure IV-15.
Elderly people with oral frailty
(all)

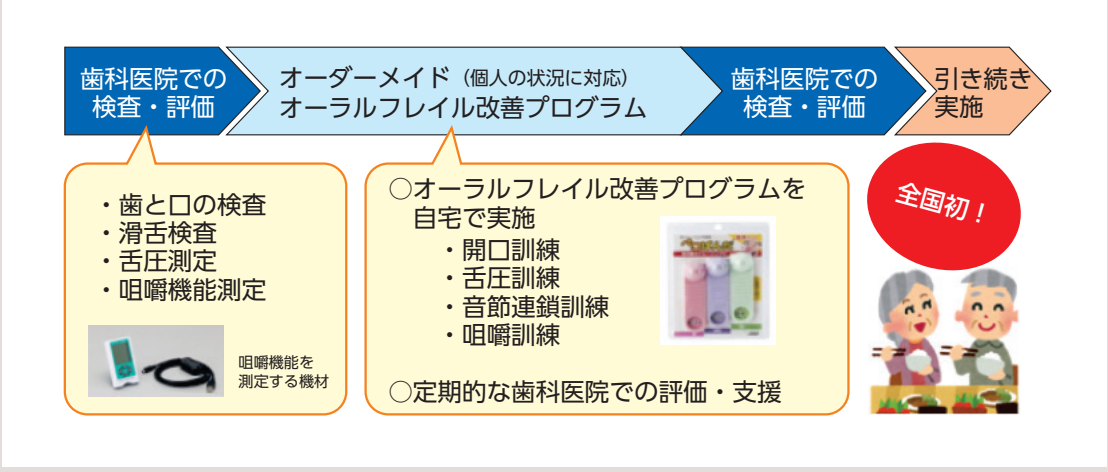

Figure IV-16. Survey for verifying the effects of the oral frailty improvement program in 2017

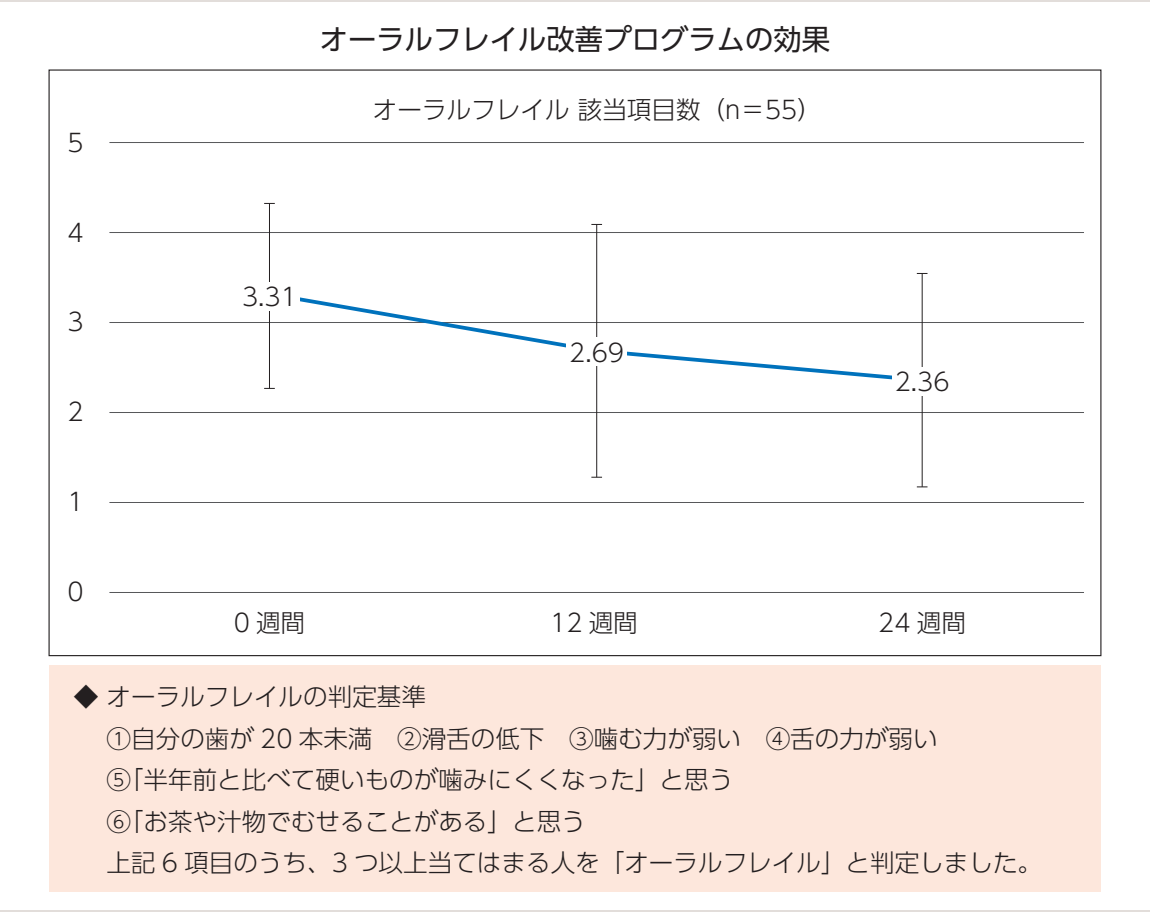

Figure IV-17. Effects of the oral frailty improvement program

Figure IV-18. Explanation with DVD at clinic

Additionally, to provide information for citizens about oral frailty, videos were broadcasted using large screens at major stations, digital signage on trains and buses, and displays at dental clinics in the prefecture (Figures IV-18, 19). Furthermore, symposiums were held to raise public awareness. Besides, a handbook was prepared for dental personnels so that the prefectural residents interested in oral frailty can receive adequate care at any dental clinic with the support of the prefectural dental and dental hygienist associations (Figure IV-20).

Figure IV-19. Digital signages in front of Odawara Station (left)/Yokohama SOGO

Figure IV-20. Pamphlets (for dental personnels)

Figure IV-21. Workshop (test equipment)

In 2018, the third year of the project, to accumulate further evidence of the program and explore a policy for regional expansion, a large-scale intervention survey was conducted by recruiting applicants from those aged 65 or above, living in Ebina City, in cooperation with the regional dental association and the local government.

Besides, a forum (training session) was established to provide information for dental personnels in other regions of Kanagawa Prefecture (Figure IV-21), and a handbook was prepared to provide information for prefectural residents (Figure IV-22, 23).

Furthermore, we have received interviews from television and newspaper companies regarding the prefectural efforts and many inquiries from all over Japan (Figure IV-24).

Figure IV-22. Pamphlet (for prefectural residents), 2017 ver.

Figure IV-23. Pamphlet (for prefectural residents), 2018 ver.

Figure IV-24. Commercial on TV Kanagawa

5. Environment of the oral frailty measures in Kanagawa Prefecture and future efforts

The "environment of the oral frailty measures in Kanagawa Prefecture," corresponding to each of the first to fourth phases, as shown in the conceptual diagram of oral frailty (2018 version), is summarized (Figure IV-25).

The first and second phases correspond to "regional" efforts. The third and fourth phases correspond to efforts at "medical/long-term care facilities." The activities of the 8020 Campaign promoters and the provision of information for the prefectural residents are intended to prevent a "decrease in the awareness of oral health" in the first phase. The frailty check project is intended to prevent a "series of minor oral problems" in the second phase. Furthermore, the assessment of oral frailty and the implementation of an improvement program are in progress to improve the "decline in oral function" in the third phase in cooperation with medical/long-term care facilities.

In 2019, the fourth year after the start of the project, based on the results of verifying the effectiveness of the oral frailty improvement program implemented in Ebina City in 2018, further information will be provided for dental personnels and prefectural residents while data are collected through follow-up surveys to establish the improvement program in the region. Additionally, based on the results of the survey implemented in 2016, which demonstrate that those affected by oral frailty were mostly living at long-term care facilities or receiving home care, the development of leaders in the field of medical and nursing care, who can perform oral cleaning (hygiene), effective in preventing aspiration pneumonia, in an integrated manner, was decided to promote the oral frailty measures at hospitals and long-term care facilities.

Thus, oral frailty measures are being promoted through various projects. The challenge is how to spread oral frailty measures to the citizens in Kanagawa Prefecture.

A survey conducted by the Kanagawa Prefectural Government in 2016 demonstrated that only 3.3% of the respondents understood the word and meaning of oral frailty. Therefore, a significant increase in this value in the next survey (scheduled in 2020) would be the greatest outcome of promoting the oral frailty measures in Kanagawa Prefecture.

【参考資料】

1) 高齢者の「健康寿命延伸」を支える　オーラルフレイルハンドブック（歯科専門職向け）平成30年3月23日発行

2) 平成28年度神奈川県「口腔ケアによる健康寿命延伸事業」調査報告書　平成29年6月発行

3) 平成29年度神奈川県「口腔ケアによる健康寿命延伸事業」調査報告書　平成30年12月発行

※ 1) ～ 3)共に、委託元:神奈川県、委託先:一般社団法人神奈川県歯科医師会・神奈川県オーラルフレイルプロジェクトチーム

Figure Ⅳ-25. Environment of the oral frailty measures in Kanagawa Prefecture

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*Random order/titles omitted

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