Problems on the diabetes prevention and treatment, and role of oral care

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COI Disclosure
Speaker: Yoshinori TORIYAMA
The speaker has no financial conflict of interest to disclose concerning this presentation.

Today’s contents
1. Two-way relationship of periodontal disease and diabetes
2. Measures and policies by the relevant government
3. Periodontal disease treatment for diabetes patients
1. Two-way relationship of periodontal disease and diabetes

2. Measures and policies by the relevant government

3. Periodontal disease treatment for diabetes patients

Relationship between Diabetes and Periodontitis

*Diabetes and periodontitis adversely affect each other.* Therefore, patients with diabetes should be informed about their relationship, consult dentists regularly to have themselves examined for oral cavity status and undergo dental care as required. (grade A; consensus)

Evidence-based Practice Guideline for the Treatment for Diabetes in Japan 2013

Cochrane Database Systemic Review

“There is some evidence of improvement in metabolic control in people with diabetes, after treating periodontal disease. **There are few studies available and individually these lacked the power to detect a significant effect.**

Most of the participants in the study had poorly controlled Type 2 DM with little data from randomised trials on the effects on people with Type 1 DM.

*Improving periodontal health is an important objective in itself.* However, in order to understand the potential of this treatment to improve glycemic control among people with diabetes, larger, carefully conducted and reported studies are needed.”

http://www.joslin.org/Dental_and_Cardiovascular_Diseases_-_Dr_Hsu_presenta.pdf
Diabetes and Periodontal Disease

People with diabetes are 2-3 times more likely to develop periodontal disease. People with periodontal disease and diabetes are more likely to have poor glycemic control, and periodontal treatment may improve glycemic control.

People with periodontal disease and diabetes are more likely to have heart and kidney disease.

http://www.joslin.org/Dental_and_Cardiovascular_Diseases_-_Dr_Hsu_presentation.pdf

The oral-systemic disease connection

Recommending periodontal treatment solely for the purpose of atherosclerotic CVD prevention is not warranted based on current scientific evidence.

Periodontal treatment must be recommended on the basis of the value of its benefits for the oral health of patients, recognizing that patients are not healthy without good oral health and taking into account American Heart Association recommendations.

http://jada.ada.org/article/S0002-8177(14)62727-6/fulltext

1. Two-way relationship of periodontal disease and diabetes
2. Measures and policies by the relevant government
3. Periodontal disease treatment for diabetes patients
Regional medical care comprehensive funds

Facing the year of 2025 when the baby boom generation will be over 75 years old, "Construction of efficient and high quality healthcare delivery system" and "Construction of a comprehensive community care system" are two urgent tasks.

As the result, a new financial support system (Regional medical care comprehensive funds) has been established that utilizes consumption tax revenue.

Each prefecture creates a prefectural plan and implements the project based on the plan.

National government

Utilize consumption tax revenue

Prefectures

Funds

(Regional medical care comprehensive funds)

Municipalities

Municipal plan (Fund project plan)

Service providers (medical unit, nursing-care service unit)

Funds ※ The burden ratio of national and prefectural is 2/3 and 1/3, respectively

Service providers (medical unit, nursing-care service unit)

Regional medical care comprehensive funds

1 Business related to the development of medical institution facilities or equipments to achieve regional medical care scheme

2 Business related to medical service at home

3 Business related to long-term care facilities (Community based service, etc.)

4 Business related to ensure health care providers

5 Business related to ensure professional caregivers

Prefectures have carried out on business concerning to medical care in 2014, followed by all health care business including long-term care since 2015.

Facing the year of 2025 when the baby boom generation will be over 75 years old, "Construction of efficient and high quality healthcare delivery system" and "Construction of a comprehensive community care system" are two urgent tasks.

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Each prefecture creates a prefectural plan and implements the project based on the plan.

Business example in prefecture ①

Prefecture: Hokkaido

Project name: Medical-dental cooperation promotion business related to diabetes and periodontal disease

Business goals: Increase of health facilities which provide dental health education (health guidance) program in the diabetic educational curriculum for inpatients.

- Establishment of medical environments which are able to tell patients with diabetes about "Relationship between diabetes and periodontal disease" and "The importance of regular oral health check-ups"

Business contents: Since diabetes and periodontal disease have negative impact on each other, the dental health educational (health guidance) program and materials which incorporated into the diabetic educational curriculum for inpatients are created in this business.

- This business are directed to doctors, nurses and other health providers working in medical facilities that carry out educational program for inpatients, with a training aimed to utilize the created educational program and materials of dental health education program.

- This business are carried out to train dental health care providers capable of performing dental care education to hospitalized diabetes patients.

Prefecture: Shizuoka

Project name: Medical-dental cooperation project cost on diabetes

Business goal: Lectures for health care providers for diabetes (held 3 times, over 150 attendances)

- Lecture preparation review committee related to diabetes (held 1 time)

Business contents: Lectures related to the importance of periodontal disease treatment for health care providers.

- Informing the residents about relationship between periodontal disease and systemic health in a lecture.

Prefecture: Tokushima

Project name: Business for promoting medical-dental cooperation for diabetes and periodontal disease

Business goal: Organizing a lecture

- 50 institutions which identify Dental passport

Business contents: Organizing a lecture related to diabetes and periodontal disease.

Business example in prefecture ②

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- 50 institutions which identify Dental passport

Business contents: Organizing a lecture related to diabetes and periodontal disease.
2. Verification for the effects on the prevention of oral diseases

In order to verify the relationship between systemic condition and oral health in people required to receive nursing home care, the effect of disease prevention is evaluated by carrying out the dental health guidance of oral function instruction programs besides the conventional oral hygiene programs.

3. Verification for the effects on the elderly

In order to verify the effects of dental health guidance for the latter-stage elderly, their dental health checkup data are analyzed and evaluated.

And more effective measure of project implementation will be proposed by collecting regional information of which implementing advanced dental health checkup for the latter-stage elderly.

Examination Committee list of efficacy verification project on dental health services

<table>
<thead>
<tr>
<th>NAME</th>
<th>AFFILIATION</th>
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<td>Professor, Department of Oral Disease Research, National Center for Geriatrics and Gerontology</td>
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<td>Takaaki Hara</td>
<td>Professor, Department of Oral Disease Research, National Center for Geriatrics and Gerontology</td>
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<td>Hideki Ando</td>
<td>Chairperson, Department of Oral Disease Research, National Center for Geriatrics and Gerontology</td>
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<td>Nobuyuki Hara</td>
<td>Chief researcher, Department of Oral Disease Research, National Center for Geriatrics and Gerontology</td>
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<td>Hidetaka Hara</td>
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<tr>
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<td>Yuichi Hara</td>
<td>Director, Department of Oral Disease Research, National Center for Geriatrics and Gerontology</td>
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For adults aged 40-74

For adults requiring long-term care

For elderly aged 75 or over

Efficacy verification project on dental health services

1. Verification for the effects on the prevention of lifestyle-related diseases

1.1. Aim

Intervention study is implemented in order to verify the hypothesis that a person who takes the dental health guidance in addition to the conventional specific health guidance will have a lower risk of lifestyle-related diseases than a person who takes only conventional specific health guidance.

1.2. Study design

- Randomized controlled study is implemented in subjects (aged 40-74) obtained informed consent of study enrollment who needed specific health guidance (positive support, motivational support).
- The intervention group will receive dental health guidance besides specific health guidance, while the control group will receive only specific health guidance for 6 months. And after 6 months, lifestyle-related examination values will be compared between the groups.

1.3. Endpoint

- Lifestyle-related data obtained in specific health checkups. (BMI, girth of abdomen, systolic blood pressure, diastolic blood pressure, FBG, HbA1c, HDL, LDL, and triglyceride)
- Indicators related to diet (Meal times, eating speed and others)
- Indicators according to lifestyle (e.g. Smoking status)
- Awareness of health
- The number of visits to medical institutions
JAPAN VISION: Healthcare 2035

② Realization of healthy life throughout a lifetime

- Oral care is closely related not only in the maintenance of oral function but also in the prevention from aspiration pneumonia and improvement of diabetes and other diseases.
- Promote further collaborations between medical and dental fields from the point of view of prevention of disease and the health management throughout the life course.

1. Two-way relationship of periodontal disease and diabetes

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Predictors of the population pyramids

Trend in percentage of persons with 20 and more present teeth

Reference: The Survey of Dental Diseases (Conducted every six years since 1957)
**Trend in mean number of present teeth by age group**

- Compared the data in each year, there is a trend to increase the mean present teeth by each age group and this trend is remarkable especially in elderly groups.

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*Note: The number of group aged 80-84 in 1987 is for reference (since the age more than 80 are combined in one group).*

Reference: Survey of Dental Diseases (Conducted every six years since 1957)

**Prevalence of periodontal disease (the % of persons having periodontal pockets with 4mm and more)**

- Periodontal disease is diagnosed by the depth between tooth and gingiva (gingival sulcus). The pathological gingival sulcus is indicated as sites with 4 mm and more of depth.
- According to the survey in 2011, the prevalence of periodontal disease in elderly was increasing. However, this is due to the increasing of present teeth in elderly.

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*Note: Compared to survey results between the year 2000 and 2011, the prevalence in elders are increasing.*

Reference: Survey of Dental Diseases (Conducted every six years since 1957)

**What to be considered in dental treatment for diabetes and diabetes with complications**

### [Diabetes]
- Confirmation of with or without complications, condition of glycemic control, and medications
- Collaboration with internal physicians
- Note to that diabetes patient is compromised
- Diabetes patients has a risk to become unconscious with high or low blood glucose level, even in a little invasive. Therefore, dentists should avoid dental treatment just before a meal.
- Epinephrine contained in local anesthesia has a function to increases blood glucose level.
- Therefore, dentists should consider the use of local anesthesia depending on case. (Can be safe to use in patients with good glycemic control)

### [Diabetic nephropathy]
- Dentists must avoid dental treatment on the day of dialysis and carry out dental treatment on the next day after dialysis under the physician's understanding.
- Confirmation of anticoagulant drug use
- Dentists do not prescribe drug related to renal excretory. Pay attention to strong effect of drug caused by hypoalbuminemia.

### [Cardiovascular complications in diabetes]
- Dentists should understand about severe cardiovascular complications.
- Dentists should talk to physicians about treatment for patients with severe cardiovascular complications.

Reference: The periodontal treatment guidelines for DM "Japanese society of periodontology" and others
Future dental treatment

**Change in patient image**
- Increase in the elderly with systemic disease
- Increase in diabetes patient
- Increase in diabetes patient with complications

**Change in dental therapy for the elderly**
- Increase in the mean number of present teeth
- Increase in patients with periodontal disease
- Increase in the frequency of invasive treatment e.g. local anesthesia, SRP

**Increase in difficulty and risk of treatment**
*Change in dental treatment for the elderly*

The main issues to be discussed with the quality improvement of dentists

- **Background**
  - It has seen increases in 8020 achiever and reductions in caries prevalence in children, and the knowledge that focuses on the relationship between oral and systemic health are integrated, while bearing in mind the maintaining and improvement of QOL in the elderly, it is required to continue to provide a seamless dental care for each life stage.
  - In August 2011, the "Law governing dental oral health" has been promulgated and enforced. Based on it has been enshrined in the provisions that oral health plays a fundamental and important role to engage in the high quality of life, it has become essential to continue to provide dental care in cooperation with medical and nursing care field.
  - With the progress of aging, it also becomes aging and diversification in patient image who visits dental clinics. In order to manage these patients, it is required to consider the way to supply dental services and the quality improvement of dentists.

- **Issues relating to the dentist supply and demand**
- **Issues relating to female dentist**
- **Issues relating to the expertise of dental care**
- **Issues relating to the supply**