

A Proposal of Health Intervention Types in Adult Dental Patients

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Abstract : It has been indicated that the declining oral functions can change for the worse on the multifaceted elements such as nutritional intake, activities of daily living, aspiration pneumonia, and mortality. Moreover, oral diseases and systemic ones have been clarified their deeply links with each other. On the basis of these facts, it would be effective provision of health instruction, if dental professionals classify the types of health intervention and focus on the contents of appropriate supports with individual needs in advance. The purpose of this article is to reconstruct health interventions for adult dental patients based on the classification of Dulmen et al. (2007). As a result, it can be classified six types of intervention: educational, cognitive, affective, behavioral, technical intervention, and others (environmental intervention). The classification of health instruction would be needed, based on the concrete indices and assessments.

Key words : oral health promotion, types of health intervention, classification, oral functions, common risk approach

1. Introduction

Oral functions are not only to retain one's life through respiration or eating meals including mastication, swallowing, taste, supporting digestion. Those are inevitable for comfortable social life such as communication, aesthetic aspect, and facial expression. The representative element of declin-

ing oral functions is tooth loss mainly caused by dental caries and periodontal diseases. It has been demonstrated that tooth loss impacts nutritional intake, activities of daily living, and of mortality lately, when one is unable to keep suitable mastication and occlusion due to the declining oral functions¹⁻⁵⁾. Moreover, it has been also reported deeply relationships between oral and systemic diseases⁶⁻⁸⁾. It would be needed oral health instruction for adults based on the interrelationships between oral and systemic diseases as well as the prevention of oral diseases such as dental caries and periodontitis. It seems to be effective to classify and to focus on the contents of dental profes-

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sional supports for health instruction matching individual needs in dental settings.

This article aims at the reconstruction of professional health interventions as to the supportive elements for adult dental patients based on the classification of Dulmen et al.⁹⁾.

2. Oral health promotion programs

In daily dental clinics, health professionals support patients to be in good health by themselves and help them to improve behavior of daily livings caused oral diseases through oral health intervention. Concretely, it is related to mainly three kinds of behavior: oral hygiene behavior, dental visit behavior, and food intake behavior. In adults, oral condition will be significantly changing due to the onset of periodontitis and tooth loss. To prevent oral diseases and to improve oral health throughout their lives, it would be needed to find the risks of oral diseases in early stages and to improve oral health behavior according to individual risks¹⁰⁾.

2 – 1. Common risk approach

There are several common risk factors between oral diseases and life-style related ones. For instance, type 2 diabetes mellitus mainly caused one's life-style such as overeating, insufficient exercise, and obesity which is worsen periodontal disease. Inversely, periodontal disease accelerates worsening diabetes mellitus and diabetic complications such as heart attack, angina, and stroke¹¹⁻¹²⁾. Periodontal treatments diminish TNF- α and IL-6 of cytokine stemmed from inflammatory gums and improves tooth movement. Those result in improvement of glycemic control and dietary habits.

Besides, diet-induced obesity has been linked to worsen diabetes mellitus and periodontal disease¹³⁻¹⁴⁾. According to D' Aiuto et al. (2008), the subjects aged 45 or older with severe periodontitis

were 2.31 times as more as suffering metabolic syndrome compared with unaffected individuals¹⁵⁾. Fast eating as well as Caloric intake enhances obesity. It would be able to approach common risks between oral health and life-style illnesses¹⁶⁾.

2 – 2. Respiratory infection: pneumonia

Aspiration pneumonia is linked to mortality in elderly people. If the elderly recover their health, it is often unavoidable to decline the activities of daily living which causes to be bedridden leading high incidence of silent aspiration¹⁷⁻¹⁸⁾. Aspiration pneumonia causes mixed infection with oral anaerobic bacteria such as periodontal bacteria¹⁹⁻²⁰⁾. To prevent aspiration pneumonia, it will need to restore reflexes of swallowing and coughing to normal. It has been reported that one of the best way to improve those reflexes is stimulation of oral hygiene and oral functional training through oral exercise without instruments²¹⁻²²⁾. In elderly people, oral function and oral hygiene are deeply associated with the systemic condition. To maintain and improve oral function to normal is to keep oral health as well as to prevent aspiration, malnutrition, dehydration. Those are connected with systemic health and life expectancy.

2 – 3. Functional tooth number and mortality

To maintain oral good functions is to avoid tooth loss preventing oral diseases and to retain appropriate mastication and occlusion. This is associated with systemic good health. It is demonstrated that functional tooth number is correlated with mortality, and tooth loss enhances the risk of death by heart disease among men aged 40-89 yrs³⁾. Besides, it is indicated that females aged 40 or more with dentures show significantly higher mortality rate that those without dentures ($p < 0.05$)⁴⁾. Functional tooth retention and restoration of oral function after dental treatments would be one of

the factors concerning to individual life expectancy.

3. Health interventions and health behavior

As to the methods of health instruction, one of the classifications of health interventions is Precede Proceed Model developed by Green and Kreuter.²³⁾ In this model, behavior factors are classified as follows: predisposing, reinforcing, enabling, and environment.

Fukai. (2005) indicates that to categorize characterization and demand of adults for a dental check-up in advance is effective to provide appropriate health education and health learning meeting the individual needs¹⁰⁾. Concerning the classification of oral health instruction, four types of interventions can be proposed: (1) advisement and counseling type; (2) providing health information and supporting awareness type; (3) environmental and follow-up support type; (4) health skill type.

van Dulmen et al. (2007) reviewed 38 systematic reviews concerning to patient adherence for medical treatments published during 15 years from 1990 to 2005⁹⁾. They suggested that the effective interventions were found in four theoretical approaches: technical, behavioral, educational, and affective intervention.

4. Health intervention types in dental adult patients

In dental health, clinical interventions for adult dental patients are classified based on the categorization of Dulmen et al. this time. As a result, it shows Table 1 following six points: (1) educational intervention, (2) cognitive intervention, (3) affective intervention, (4) behavioral intervention, (5) technical intervention, (6) others (environmental intervention). Oral health instruction includes following behavior: oral hygiene behavior, dental visit behavior, food intake behavior, and systemic risk reduc-

tion behavior on oral health.

Concretely, "educational intervention" includes providing oral health information based on the scientific evidence such as etiology and prophylaxis of oral diseases, effects of plaque removal and treatments, negative effects, and risks of treatment break. "Cognitive intervention" is associated with reconstructing cognitive bias of one's behavior and condition. For instance, it is a case that one does not notice the facts, instead of presenting gingival inflammation, dental plaque, chewing preference, fast eating, and unbalanced diet. "Affective intervention" is related to encouragement, comfortable experience, perceived improvement, and relieving anxiety. This is a case that one feels refresh in one's mouth through professional tooth cleaning; one perceives improvement of gingival bleeding. "Behavioral intervention" is to support patients' actual health behavior by way of concrete goal setting and to follow them up. For instance, it refers to self-monitoring for implementation of fluoride mouth rinsing on a calendar; to send a notice letter of next dental check-up; to set a self goal for proper sweet intake through dietary records. "Technical intervention" means technical instruction and concrete supports. That is, regarding oral hygiene, it contains the following elements: instrumental usage, choice, keeping, exchange interval; dental visit frequency and duration; proper number of chewing strokes and mouthful volume to prevent or improve fast eating and obesity. "Others (environmental intervention) are mainly associated with the environmental factors to improve or prevent patients' health behavior. It includes occupational environment as to time restriction; family cooperation for proper sweet intake; emergency acceptance on a holiday, home dental care in case of visiting difficulty, to secure parking areas, and to keep dental rooms and instruments clean.

Table 1 A classification and types of oral health intervention in adults

Oral Health Programs	Intervention Types					Others (Environmental)
	Educational	Cognitive	Affective	Behavioral	Technical	
Oral Hygiene Behavior : toothbrush, interdental brush, dental floss, tongue brush, toothpaste, mouth rinsin	etiology and prophylaxis of oral diseases/effects of plaque removal and treatment/negative effects	reconstructing cognitive bias	comfortable experience/perceived improvement/praises	self-monitoring and goal setting	choice, usage, keeping, timing, duration, exchange interval, purchase ways	occupational environment/ family cooperation
Dental Visit Behavior: regular dental check-up/ keeping appointment	etiology of oral diseases /effects of regular dental check-up/ risks of treatment break	reconstructing cognitive bias	relieving anxiety/perceived improvement	notice of next dental check-up or appointment	dental visit frequency and duration/ explanation of present status and treatment plan	emergency acceptance/ home dental care/ amenities
Food Intake Behavior: food choice ¹⁾ regularity, amount mastication ²⁾	relationship between sweets and dental caries/negative effects of unbalanced diet having a breakfast negative effects of habitual chewing/ fast eating and obesity	reconstructing cognitive bias	praises/ perceived improvement	self-monitoring and goal setting	sweets choice/ proper timing of sweet intake/ occlusional function restoration and proper mastication after regular intake time bilateral balanced mastication/ proper number of chewing strokes and mouthful volume	occupational environment/ family cooperation
Systemic Risk Reduction Behavior on Oral Health: Diabetes Mellitus smoking saliva (dry mouth) aspiration	relation between diabetes and periodontal disease relation between smoking and periodontal disease relation between saliva and oral diseases causes and prevention of aspiration pneumonia	reconstructing cognitive bias	perceived improvement	self-monitoring and goal setting	food choice/ proper number of chewing strokes/ improving periodontal disease stop smoking stimulation of salivary gland/ tongue movement/ bilateral balanced mastication proper number of chewing strokes and mouthful volume/ daily oral function trainin/ stimulation through oral hygiene	family cooperation

1) including sweets intaking limitation and improving of unbalanced diet caused by tooth loss

2) including chewing preferences and number of chewing strokes

5. Conclusion

It would be effective approach that dental professionals support individual adult patients focusing on the classified health instruction in advance within a clinical time limit. Moreover, dental health providers tend to regard the results of clinical indices such as CPI and DMFT as importance to assess oral health condition. To support patients' improvement of health behavior, it is needed health instruction based on the subjective assessment to promote self-awareness. From these points, it is assumed that the classification of health instruction would be required, based on the concrete indices and assessments, applicable in dental clinics easily.

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