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Yoko Sato Ai Miura Atsushi Saito

Dysphagia management in a 3-year dental hygiene education programme in Japan

Authors' affiliations:

Yoko Sato, Ai Miura, Atsushi Saito, Miyagi Advanced Dental Hygienist College, Sendai, Japan Yoko Sato, Graduate School of Dentistry (Aging and Geriatric Dentistry), Tohoku University, Sendai, Japan Atsushi Saito, Department of Periodontics, Tokyo Dental College, Chiba, Japan

Correspondence to:

Atsushi Saito Miyagi Advanced Dental Hygienist College 1-5-1 Kokubuncho Aoba-ku Sendai Miyagi 980-0803 Japan Tel.: +81 22 222 5079 Fax: +81 22 222 5013 E-mail: nobosai@wj8.so-net.ne.jp

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Abstract: This paper reports the development and evaluation of a dysphagia management course taught to the third year dental hygiene students during 2004-2005 as one framework of the new curriculum. The course consisted of lectures by specialists in each field, basic practice and clinical practice at a facility for the elderly. Evaluation of the course showed that improvements were found in students' understanding in certain subjects when compared with that during 2003-2004. Scores on the post-test were statistically significantly higher than those on the pre-test, showing that basic knowledge of the students had been improved. Introductory and follow-up lectures by dental hygiene instructors and appropriate basic practice enhanced the learning process of the students. In the clinical practice, the concept of 'dental hygiene process of care' was incorporated. The dental hygiene process facilitated the students in planning and implementing dental hygiene care that meets the needs of the individual clients. This active learning experience enhanced the students' understanding of dysphagia management. Although further improvements are necessary, this dysphagia management course should help dental hygienists in playing a greater role in the field of oral care and dysphagia rehabilitation.

Key words: dental hygiene education; dental hygiene process; dysphagia management

Introduction

In Japan, dental hygiene education is facing a new era: associate degree programmes are shifting up from 2 to 3-year programmes in order to meet the diverse needs of society (1). Health problems within a rapidly ageing population require dental hygienists to provide client care that is not just highly professional but also

individualized. It is necessary to address the complex and dynamic entity of patient-centred care and efficacious outcomes.

Dysphagia refers to difficulty in eating as a result of disruption in the swallowing process. It can be a serious threat to one's health because of the risk of aspiration pneumonia, malnutrition, dehydration, weight loss and airway obstruction (2). Possible causes include ageing, stroke, head and neck injuries, etc. Relatively healthy elderly people are also at risk for dysphagia because of the reduction in oral, pharyngeal and oesophageal functions with ageing (3). Dysphagia is receiving considerable attention among health-care professionals in Japan, and more than 1 million people are estimated to have treatment needs relating to eating and swallowing function (4). Dental hygienists should play a role in dysphagia management and systematic interventions based on the professional oral care is necessary in order to assume such a responsibility (5).

In Japan, the first 3-year dental hygiene programme was established at Miyagi Advanced Dental Hygienist College in 2001. As a framework of the new curriculum, a dysphagia management course was developed and introduced in 2003. General instructional objectives (GIOs) and specific behavioural objectives (SBOs) of the course are shown in Tables 1 and 2. The SBOs were also set for each lecture and practice in order to avoid excessive repetition and to clearly point out the objectives to the students. The main portion of the course consisted of 30 h of lecture and basic practice. The learning outcome of the 2003–2004 course was not satisfactory according to the subjective evaluation of the students' survey and written reports.

Table 1. Course objective

General instructional objective (GIO)

To obtain basic knowledge, technique and attitude concerning dysphagia management and professional oral care for the appropriate dental hygiene intervention for clients with dysphagia

Table 2. Specific behavioural objectives (SBOs)

At the completion of this course, students should be able to: 1. Identify roles and responsibilities of other professionals in a dysphagia team and how the dental hygienist plays a key role in this interaction

2. Identify dental hygiene intervention that improves quality of life of the clients

3. Express opinions on the problems of dysphagia

4. Demonstrate knowledge of the normal/abnormal anatomy and physiology as it relates to eating and swallowing in a developmental framework across the age continuum

- 5. Explain diagnostic tests for dysphagia
- 6. Perform basic assessments for clients with dysphagia
- 7. Explain basic direct and indirect training
- 8. Understand professional oral care and implement it

9. Be aware of ethical considerations and professional issues related to dysphagia management Students found it difficult to understand the general lectures that contained highly specialized topics.

In order to address this, efforts were made to improve learning strategies. This paper describes the development and evaluation of the dysphagia management course of 2004–2005.

Method

Study population and course schedule

The dysphagia management course was taught to 69 third year students during 2004–2005. They had courses related to oral health sciences, introductory nursing science and professional nursing care the previous year. They also had experienced 9 months of dental hygiene clinical practices at dental offices, hospitals and various other facilities. The dysphagia management course started in September 2004 and ended in February 2005.

Course development and learning strategies

The course contents and the instructors are shown in Table 3. The instructors were selected on the basis of their expertise in dysphagia management from various fields. Full-time dental hygiene faculty members gave introductory and follow-up lectures to assist students' learning.

Table 3. Dysphagia Management Course 2004–2005 at Miyagi Advanced Dental Hygienist College

Subjects	Contents	Instructors
General Lecture	Overview of dysphagia rehabilitation Group discussion	MD (Rehabilitation Specialist) Dental hygienists
Particular lectures	10 - C - C - C - C	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Development of eating and swallowing	Functional development Review of anatomy and physiology	Dentists
function	Mechanisms	Paediatrician
Dysphagia	Characteristics of dysphagia Ageing and function	Paediatrician
	Assessment Screening tests Video fluorographic study Video endoscopic swallowing study	Speech therapist
Rehabilitation	Basic training Direct therapy Indirect therapy Nutritional counselling Rehabilitation brushing	Dental hygienists Paediatrician Speech therapist Nutritionist Dental hygienists
Clinical practice and summary	Dysphagia management for elderly	Dentists
	Team approach Group discussion	Nurse Dental hygienists

As a new learning strategy for the 2004-2005 courses, a clinical practice programme was introduced. Students who indicated an interest in participation were selected on the basis of their academic records. Once a month for 10 months, the students and the instructors (dental hygienists and dentists) visited a facility for the elderly. The aim of the practice for the year was to teach professional oral care that could contribute to the basic dysphagia rehabilitation. Client volunteers were carefully selected based on their state of health and their stage of dysphagia by our dental hygiene instructors after consulting with facility nurses and other healthcare professionals. Informed consent was obtained prior to the practice according to facility and dental hygiene programme guidelines. Under the supervision of instructors, the students assessed the functional levels of the clients, eating and swallowing, and their oral hygiene conditions. After initial visits, the students filled out process of care worksheets in order to make dental hygiene diagnosis and plan dental hygiene care. The instructors guided the students through the process, and together they implemented dental hygiene care for the clients. The students who took part in the clinical practice performed case presentations at the end of the practice in order to share their learning with other students.

Evaluation methods

A pre-test consisting of 20 objective questions was given to students at the beginning of the course, in order to test their basic knowledge concerning anatomy, physiology, oral functions and dysphagia. The students were tested again with a post-test towards the end of the course. The differences in the test scores were assessed by Wilcoxon matched paired test (performed using GraphPad InStat version 3.05 for Windows; GraphPad Software, San Diego, CA, USA).

The students were asked to submit written reports after each lecture. Finally, students were given a post-course survey, in order to obtain their subjective evaluation of the course.

As for the clinical practice at the facility for the elderly, the students evaluated their own dental hygiene interventions. The instructors then evaluated the process of care sheets and gave them feedback. At the case presentations, the audience (the remaining students) also evaluated each case presentation.

Results

Pre- and post-tests

The results of the basic cognitive tests are shown in Fig. 1. The scores on the post-test were statistically significantly higher than those on the pre-test.



Fig 1. Average scores of pre- and post-tests (n = 69) (**P* < 0.0001 by Wilcoxon matched pairs test).

Post-survey

The results of the survey taken at the end of the course are shown in Fig. 2

Students reported that it was difficult to completely understand the overview of dysphagia given in the general lectures. However, the percentage of students who indicated their understanding as 'good' (46%) was relatively higher than the previous year (7%, data not shown).

Although their understanding of the subsequent particular lectures was not completely satisfactory, students indicated better understanding for lectures with basic practice.

Students expressed low levels of understanding in dysphagia assessment and in certain areas of rehabilitation techniques. However, the majority of students (82%), did recognize the importance of dysphagia management in dental hygiene education.

Clinical practice

Evaluation of the worksheets indicated that the incorporation of the concept of the dental hygiene process was effective in planning and implementing individualized dental hygiene care. Also, the development of case presentations further enhanced student education.

The survey taken from the remaining students immediately after the case presentations indicated that the case presentations helped them to better understand dysphagia management.

Discussion

In this course, as a formative, objective evaluation, pre- and post-tests were performed. The improvement in basic understanding of dysphagia and its management was significant



Fig 2. Post-course survey for subjective evaluation of students' understanding.

(Fig. 1), indicating the learning strategies for the course were basically effective.

The results of the course evaluation in the first year (2003–2004) showed that the students had difficulty in fully understanding the lectures, as the contents were highly specialized and comprehensive. In order to address this, in the second year of the course (2004–2005), dental hygiene instructors gave introductory lectures in order to motivate learning. Also, they gave follow-up lectures to facilitate students' understanding. This strategy seemed to be effective according to the survey (Fig. 2).

It is important to introduce active learning strategies into dental hygiene education (6). In the present study, understanding of the contents that involved basic practice with the dental hygiene instructors was relatively high, indicating that the active learning strategy and the follow-up efforts facilitated better understanding of this highly specialized area. Introduction of other strategies including problem-based learning may be considered to further enhance the learning outcomes.

Students expressed particularly low understanding of client assessment and in certain rehabilitation methods, indicating a need for more actual experiences in clinical settings. For better understanding of dysphagia management, a practical experience is a necessity, and student clinical placement is reported to be effective in dysphagia management (7). In order to

practice at a facility for the elderly was introduced in 2004. The aim of this practice was to gain understanding of clients in various settings, and to teach dental hygiene interventions through professional oral care and fundamental dysphagia rehabilitation. The evaluation of the clinical practice indicated that the students gained a deeper understanding of dysphagia management. It was necessary to limit the number of students for the practice to avoid inconveniencing the facility. Moreover, it was very important to start at a small scale in order to have a close supervision over students. Thus, case presentations were developed to share the learning experiences with the remaining students. Knowledge and skill development of dental hygiene instructors is necessary in order to increase student participation in clinical practice. Also, appropriate evaluation methods are required in order to objectively assess the learning outcome of students.

provide students with more active learning experience, clinical

As the population of elderly people increases in Japan, the prevalence of dysphagia is also expected to increase. In a study, the prevalence of dysphagia among community-dwelling elderly subjects aged 65 years or older was 13.8% (3). To treat their disorders and prevent complications, the coordination of health-care services is very important. Problems associated with the oral preparation stage are the most prevalent in dysphagia, and dentists and dental hygienists are responsible for

the professional care within the oral cavity. Thus, at this stage, dental hygienists' role is significant in dysphagia management team (8). One example of such a role is the prevention of aspiration pneumonia. With proper professional oral care, dental hygienists can minimize the risk of bacterial pneumonia in clients with dysphagia (5, 9-11). Other interventions, including oral muscle training and enhancement of eating and swallowing function(12), are also in keeping with the profession of dental hygiene. Importance of multiprofessional collaboration in management of dysphagia is widely recognized (13-15). Since a role for dental hygienists in a multidisciplinary healthcare team is important (16), sufficient knowledge and skills in dysphagia management should also provide basis for establishing the dental hygiene contribution to this field. Toward this end, as a key component of the new 3-year dental hygiene curriculum, the dysphagia management course was introduced at Miyagi Advanced Dental Hygienist College. Although reports have been made concerning the dental and dental hygiene education of dysphagia (17, 18), such an extensive program focused on dysphagia management is unique in Japan. Particular attention was paid to the intervention of dental hygienists in designing the present course.

In the clinical practice, the oral health-related quality of life model (OHRQL) for dental hygiene (19) was adopted in the assessment. Based on the concept of the dental hygiene process of care (20–22), students design dental hygiene care plans. It is necessary to develop appropriate dental hygiene interventions in dysphagia management. Incorporation of the process of care would allow dental hygienists to advance interventions from basic oral care to evidence-based dental hygiene dysphagia management. Currently, an effort is being made to evaluate the outcome of the interventions in terms of quality of life of the clients, and incorporation of the OHRQL model should guide through the process.

Conclusions

The new learning strategies including introductory and followup lectures were effective in improving student learning outcomes. The active learning experience of the clinical practice and the subsequent case presentations further enhanced students' understanding of dysphagia management.

Education in dysphagia management encourages students to become aware of important problems associated with clients. Dental hygienists should play a greater role in an inter- or transdisciplinary approach to dysphagia management. This will certainly provide a possibility in promoting professional development of dental hygiene in Japan.

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