

Abstract

Educational program to support smoking cessation
for dental hygiene students based on the 5As and 5Rs

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1. Background and Objectives

According to a Patient Survey conducted by the Ministry of Health, Labour and Welfare (MHLW) in 2020, the total number of patients estimated to be under continuous treatment for "gingivitis and periodontal disease" is reported to be 5.05 million. Many smokers visit dental clinics, and are an environment that facilitates the opportunity for frequent interventions necessary to support smoking cessation. Thus, it is important for dental healthcare providers to disseminate knowledge about the health effects of smoking in dentistry and to support smoking cessation to the target population of dental health guidance. In particular, dental hygienists play a central role in dental health guidance and are expected to be actively involved in smoking cessation support, so they need the skills to support it.

To promote smoking cessation support by dental hygienists, we examined the education necessary to acquire specific smoking cessation interventions in dental hygienist education (Study 1). Based on the results of Study 1, we aimed to develop an educational program to compensate for the lack of current smoking cessation education (Study 2) and to verify the effectiveness of the program (Study 3).

2. Study 1: Survey of current status of smoking cessation education at dental hygienist training institutions

We conducted a self-administered, anonymous survey of educators in charge of smoking cessation support at 170 dental hygienist training schools nationwide, and obtained responses using Google Forms. The survey included questions regarding (1) demographic data: gender, age, and type of dental hygienist training institution, and (2) classes on smoking cessation: basic information about lectures and exercises (practical training) that support smoking cessation, contents of lectures and exercises (practical training), necessity of lectures and exercises (practical training) to support smoking cessation, and barriers to smoking cessation education. Kruskal-Wallis tests were conducted on implementing lectures and exercises, the need for lectures and exercises (practical training), and barriers to teaching smoking cessation support, with the type of dental hygiene training institution as a factor.

There were 84 respondents from 77 schools, with a response rate of 45.3% based on the number of training institutions. By training institution, 63 (75.0%) were from vocational schools, 10 (11.9%) from junior colleges, and 11 (13.1%) from universities. Regarding the lecture time and content of the smoking cessation support classes, about half of the training institutions had a lecture time of 91 minutes or longer, and almost all of the institutions provided education related to smoking knowledge. On the other hand, The implementation rate of lectures on smoking cessation methods was low, especially in vocational schools. Regarding the time and content of exercises and practical training, more than half of the respondents answered "0 minutes," and many answered "not implemented or not sure if it is implemented" for almost all items. Education on the harmful effects of smoking, such as its impact on health, was provided in lectures at many training institutions. On the other hand, there were few lectures and exercises (practical training) on specific smoking cessation interventions, and the implementation rate varied among dental hygienist training institutions. These findings suggest the need for standardization of educational content to disseminate specific smoking cessation support methods at educational institutions.

3. Study 2: Developing an educational program to support smoking cessation for dental hygiene students

To address the issues identified in Study 1, we developed an educational program to enable standardized education in dental hygiene training institutions using the WHO-recommended 5A and 5R smoking cessation intervention methods. A total of three video contents for lectures and exercises (practical training) were created, referring to previous studies (Nakamura et al., 2017), existing video materials (Inagaki, 2019; Japan Dental Association, accessed 2023), and books (Japan Society for Smoking Cessation, 2019). The video contents consisted of an 8-minute lecture-style video on the overview of the 5A and 5R instructional procedures, a 20-minute exercise (practical training) video to learn the instructional procedures for smoking cessation intervention in a role-play format on the 5A, and a 15-minute exercise (practical training) video to learn the instructional procedures for smoking cessation intervention in a role-play

format on the 5R. Both video contents are of a length that can be easily introduced into lectures and practical training, and clarifying the effectiveness of educational programs using these video contents will lead to more practical standardized educational programs.

4. Study 3: Verification of the effectiveness of an educational program to support smoking cessation based on the 5As and 5Rs for dental hygiene students

To verify the effectiveness of the educational program for smoking cessation support developed in Study 2, we conducted a study of 331 dental hygiene students at five vocational schools, one junior college, and one university, who agreed to cooperate in the study. The students were asked about their understanding of the 5As and 5Rs of the brief smoking cessation intervention method, their self-efficacy, their thoughts about smoking cessation support, and their impressions of the program at the following three times: (1) before all three videos, (2) after the lecture videos, and (3) after all three videos. The responses were obtained using a self-administered, anonymous survey form or Google forms. The Friedman test was conducted for each item, dividing the respondents into two groups: "vocational schools" and "junior colleges/universities." The Friedman test was conducted using three time points as factors (before the video content, after the video content of the lectures, and after the video content of the exercises). Effect sizes were calculated to examine the magnitude of changes in comprehension and self-efficacy due to educational programs.

Of the 331 respondents, 294 responses with no unanswered questions were taken as valid responses (valid response rate: 88.8%). The results of Friedman test showed that all items were significantly changed for both vocational schools and junior colleges/universities ($\chi^2=93.02-350.55$, $p<0.001$). The results of multiple comparisons showed a significant stepwise increase in scores for all items ($p<0.001$). Analysis of the effect sizes showed that the vocational schools had large effect sizes, greater than 0.5, for pre- and post-lecture video content changes in 5A and 5R comprehension and 5A and 5R self-efficacy. These results suggest that this program has a certain educational effect.

5. Conclusion

Study 1 revealed the small amount of time spent on exercises related to smoking cessation education, the small number of classes on specific intervention methods, and the significant variation among training institutions. The educational program, including three video contents, was developed in Study 2 to solve these problems. In Study 3, the effectiveness of this educational program was examined, and its effectiveness was demonstrated. It is expected that the educational program developed in this study will be used to provide smoking cessation support education at dental hygienist training institutions, enabling standardized smoking cessation support education at a wide range of educational institutions and leading to an increase in the implementation of smoking cessation support by dental hygienists in clinical practice.