An Examination of the Post-graduate Dental Clinical Competency Evaluation at the End of Clinical Training for Professionalism in Dental Education

Hiroya Gotouda,¹ Takanori Ito,² Yasuhiro Okamoto,² Takashi Uchida,² Chieko Taguchi,¹ Michiharu Shimosaka,³ Mana Fuchigami,⁴ Akira Fukatsu,⁴ Kensuke Matsune,⁵ Yoshiharu Kono,⁵ Kiyoshi Matsushima,⁶ Masamichi Komiyama,⁷ Kazutaka Kasai,⁸ Koh Shibutani,³ Misao Kawara,⁹ and Ikuo Nasu¹

Departments of ¹Preventive and Public Oral Health, ²Oral Diagnostics, ³Anesthesiology, ⁴Laboratory Medicine for Dentistry, ⁵Social Dentistry (Dental practice administration), ⁶Endodontics, ⁷Oral Surgery, ⁸Orthodontics, ⁹Oral Function and Rehabilitation, Nihon University School of Dentistry at Matsudo, Matsudo, Chiba 271-8587, Japan

Abstract

In the current post-graduate dental clinical training program, various clinical competency evaluation methods have been reported based on a nationwide dental university survey, in an attempt to advance and improve the evaluation methods. However, the point has not yet been reached for establishing clear evaluation standards and task items for a clinical competency evaluation for the overall evaluation at the end of training. Moreover, in post-graduate dental clinical training, multiple training programs are established. Because the same examination is conducted among trainees completing different programs, the evaluation method must be appropriate and standardized, taking into account differences in training content. However, no reports exist regarding an investigation of the evaluation. In the present study, we evaluated the post-graduate dental clinical competency examination as a pilot study with the objective of establishing a clinical competency evaluation for professionalism in dental education. An examination was conducted among clinical dental trainees at the end of their clinical training, based on their programs. The evaluation items included skill examinations as clinical training competency achievement confirmation testing. As a control, an evaluation on knowledge was included among the analysis items. The mean evaluation results for the skill examinations by program indicated no significant differences between programs. In the knowledge examination, the mean evaluation results in one program (clinical training in combined- and cooperative-type facilities) was significantly higher compared with the other programs (p<0.01). Differences in difficulty level were observed in the evaluation items according to program (p<0.05, p<0.01). These results suggest that no significant differences between training programs were found in the scores, although there was a significant between programs in the knowledge evaluation. Therefore, it is considered necessary to establish an appropriate and standardized post-graduate dental clinical competency evaluation by reviewing the method of comparison between programs and by further reducing the differences in difficulty between tasks.

Keywords:
post-graduate dental clinical competency evaluation, trainee dentists, professionalism, behavioral science in dental practice

Introduction

Due to the recent increase in diversity in lifestyles, a super-aged society, and the development of medical technologies, the dental health services required by citizens have become sophisticated and diversified. In post-graduate dental clinical training, it is necessary to improve the quality of dentists so that they can respond to the current situation (1, 2). In 2015, the Ministry of Health, Labour and Welfare announced that a final determination regarding clinical
training should be formally conducted based on the evaluation criteria established by the training management committee. The criteria would be used to evaluate the final determination specifically noted in the training program, at least standardizing the items evaluated for making the final determination (1,3).

Various clinical competency evaluation examinations for clinical training have been reported in an attempt to advance and improve the evaluation methods (4–12). However, the point has not yet been reached for establishing clear evaluation standards and task items as a clinical competency evaluation for the overall evaluation at the end of training in the current post-graduate dental clinical training programs in Japan. Moreover, multiple training programs are established. Because the same exam is conducted among trainees completing different programs, the evaluation method must be appropriate and standardized, taking into account differences in training content. However, no reports exist regarding an investigation of the evaluation.

In the present study, we evaluated the post-graduate dental clinical competency examination as a pilot study with the objective of establishing a clinical competency evaluation for professionalism in dental education.

Materials and Methods
An examination was administered to trainee dentists (129 subjects) at Nihon University Hospital at Matsudo in March 2013 at the end of their clinical training, based on their programs (Program A, n = 20: managed facility single-type; Program B, n = 80: 4-month training in combined- and cooperative-type facilities; Program C, n = 29: 8-month training in combined- and cooperative-type facilities). The evaluation items included practical (skill) examinations on prosthetic dentistry (psychomotor domain), conservative dentistry (psychomotor domain), and medical interview (affective domain) assignments, as clinical training competency achievement confirmation testing. As a control, a written examination on knowledge (cognitive domain) was included in the analysis items.

This study was approved by the Ethics Committee of the Nihon University School of Dentistry at Matsudo (EC09-028).

For the statistical analysis, the Tukey-Kramer multiple comparison test was used to compare the mean values among the three groups.

Results
The mean total score (mean ± SD) for the practical examinations of the clinical training competency achievement test was 67.6 ± 5.9. The minimum score was 49 points, while the maximum score was 82 points. The distribution was most concentrated at 63 to 65 points. The mean scores for prosthetic dentistry, conservative dentistry, and medical interviews were 64.6 ± 14.6, 65.1 ± 4.0 and 73.2 ± 8.3, respectively. The mean score for the medical interviews was significantly higher compared with the other areas (p < 0.001) (Fig. 1).

The mean total scores by program for the skill examinations in Program A, Program B, and Program C were 67.8 ± 5.9, 67.5 ± 6.0 and 67.7 ± 5.8, respectively, indicating no significant differences between them. The total score for the knowledge examination was 76.8 ± 6.2. In the knowledge examination, the mean score for Program C (79.6 ± 5.0) was significantly higher than that of Program A (73.1 ± 6.5) and Program B (76.7 ± 6.0) (p < 0.05, p < 0.01) (Fig. 2).

The mean scores for prosthetic dentistry, conservative dentistry, and medical interviews in Program A were 66.1 ± 14.1, 64.0 ± 3.9 and 73.4 ± 7.4, respectively, indicating a significant difference (p < 0.05, p < 0.01) (Fig. 3). In Program B, the scores were 63.1 ± 15.2, 65.6 ± 4.0 and 74.1 ± 8.1, respectively, indicating a significant difference (p < 0.01) (Fig. 4). In Program C, the scores were 67.4 ± 13.3, 65.3 ± 4.1 and 70.5 ± 9.0, respectively, indicating no significant difference between (Fig. 5).
Discussion

In the present study, the evaluation results for medical interviews were significantly higher than the evaluation results for prosthetic dentistry and conservative dentistry in the post-graduate clinical training competency achievement confirmation test. When conducting the Objective Structured Clinical Examination (OSCE) by combining assignments of different difficulty levels, even if the examinees are at the same level of competency, there may be a difference in the total score percentage due to differences in difficulty levels of the assignments. In terms of fairness, it is necessary to minimize these differences as much as possible. It has been reported that in the OSCE, there is a discrepancy between the average score in medical interviews at the first visit and other domains, which reveals the specificity of this assignment (13–15). In addition, a difference in difficulty level was observed in the post-graduate medical interview evaluation; this raises minimization of the difference in difficulty levels between other domains as an issue to be discussed in the future.

The OSCE scores of subjects after post-graduate clinical training were almost the same among all program groups, with the differences being less than 0.5 point. In particular, an association between the knowledge evaluation and the amount of experience has been reported (2,16). The significantly higher scores for the written examination (knowledge evaluation) in the Program C group are considered to be due possibly to the recruitment selection criteria for clinical training.

Trainee dentists in Program A and Program B, and none from Program C, undergo comprehensive dental training that is a main part of the clinical training in the managed facility. As part of this training, trainee dentists in Program A and Program B make multiple presentations in case review meetings (at baseline) and case report meetings (during and at the completion of treatment) on the patients whom the residents take care of with preceptors.

It is assumed that the low scores of the trainee dentists in
Program C for medical interview are attributable to the fact that these dentists have a limited training period in a managed facility (the university hospital), which offers many opportunities to receive education and training relating to diagnosis and interviewing as described above. Further investigations involving increased numbers of subjects over a number of years are needed.

In conclusion, we conducted this investigation as a pilot study to establish an appropriate post-graduate dental clinical competency evaluation after post-graduate clinical training. No significant differences between training programs were found in the scores for the post-graduate dental clinical competency evaluation, although there were significant differences between programs in the knowledge evaluation. Differences in difficulty level were observed in the evaluation items by program. It is considered necessary to establish an appropriate and standardized post-graduate dental clinical competency evaluation by reviewing the method of comparison between programs and by further reducing the differences in difficulty between tasks.

Acknowledgments

This study was supported in part by a Grant-in-Aid for Scientific Research (16K11896, 26463193) from the Japan Society for the Promotion of Science.

References


