Towards standardized clinical training: Developing an integrated clinical curriculum for dental trainees in a hospital of stomatology

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Abstract
Objective
In order to standardize the teaching criterion and improve the quality of clinical training between different dental trainees, an integrated clinical curriculum was developed since September 2014 in the Hospital of Stomatology, Fujian Medical University of China. This article aimed to introduce the development of this curriculum and evaluate the dental trainees’ view on the curriculum.

Methods and analysis
A six-step approach was used to develop the curriculum. Dental trainees (n=142) rated the curriculum with satisfaction scores on a Likert-type scale and answered several open-ended questions. One-way ANOVA and Fisher's exact probabilities were utilized to analyzed satisfaction scores among four types of dental trainees.

Results
The mean satisfaction scores was 7.96 (out of 10). There was no significant difference in satisfaction scores among four types of dental trainees (P=0.209) and between the two genders (P=0.233). 91.55% of the dental trainees reckoned that the curriculum was valuable to their clinical training. There was no significant differences among the four types of dental trainees in terms of helpfulness to promote and standardize their clinical skills training (P=0.828).

Conclusions
The present findings suggest that the dental trainees appreciated the integrated clinical curriculum. This integrated curriculum is considered suitable for current condition of dental clinical training in China.

Background
The education of dentistry in China began in 1917, but the development was slow until 1980s [1]. From 1980 to 2004, more than 50 dental schools were set up in China. So far, the most common mode of dental education in China is five-year undergraduate education [2], which usually contains 4 years of didactic and laboratory courses and 1 year of full-time clinical training (clinical internship). After graduating from dental school and at least 1 year of dental clinical practice, the graduates are
eligible to take the National Medical Licensing Examination (NMLE). Once pass through the NMLE, he/she will be qualified to practice as a dentist in China [3].

In some western countries, the applicants to the dental school have a bachelor degree with required pre-dental courses from an accredited college [2]. The enrolled dental students have already got some knowledge of biomedical sciences before entering the dental schools. However, due to the historical and cultural reasons, dental schools in China recruit candidates from senior high schools. Therefore, the current Chinese undergraduate dental program requires dental undergraduates to study biomedical sciences in the first three years of university study. Such as Anatomy, Biochemistry, Cell Biology and so on. The dental undergraduate students start their dental curriculum in the fourth year, and receive the clinical training in the fifth year. As a result, the dental undergraduate students in China have much less time to receive professional dental education than dental students in the US or Europe. Therefore, in order to improve the professional skills, continuing education after graduation is increasingly concerned by Chinese dental educators and the government.

There are four types of dental trainees receiving clinical training in Chinese hospitals, including interns, visiting dentists, postgraduates, and residents. Interns refer to the undergraduate students receiving the clinical training in the fifth year of their university study. Visiting dentists refer to the trainees who pursue continuing education in the higher level hospitals and usually have one to five years of clinical experience. Postgraduates include Master’s and Doctoral students. Residents are trainees in General Resident Training Program, which is led by the Chinese government to train doctors with high levels of clinical skills. In China, the conditions and teaching levels among different hospitals vary, and the characteristics of four types of dental trainees are different. This scenario makes standardized, unified and homogenized clinical training a huge challenge for clinical training in China [4, 5].

Hospital of Stomatology of Fujian Medical University (HSFMU) was set up in 1984, currently has more than 450 employees, including nearly 150 attending dentists. About 150 trainees receive professional clinical training in HSFMU every year. Instructors of HSFMU not only teach clinical skills but also explain relevant theoretical knowledge. However, the instructors’ teaching experience and methods
are different, which makes the effect of clinical training between different dental trainees vary. In order to establish a standardized, unified clinical training system, the HSFMU developed an integrated clinical curriculum of Clinical Knowledge in Oral Medicine in September 2014. The aim of present study was to introduce the development of this integrated clinical curriculum and evaluate the dental trainees’ view on the curriculum.

Methods

Development of the curriculum

The curriculum was developed according to six-step approach [6] and described as follows:

(1) Problem identification and general needs assessment: The Teaching Department of HSFMU convened dental trainees and instructors several times to conduct a detailed communication and consultation on the problems existing in the clinical training system at that time. As a result, almost all instructors and dental trainees suggested to initiate a clinical curriculum. And like other scholars opinion [7], they insisted that the new curriculum should include several core dental clinical skills.

(2) Target assessment: The proposed clinical curriculum integrates the most important clinical skills in stomatology, aiming at teaching standards, norms, and unified clinical skills. The clinical skills taught in this curriculum were identified based on the current literature and group discussions among the Teaching Committee members of HSFMU.

(3) Defining goal and objective: The goal of the integrated clinical curriculum was to promote and standardize the clinical skills learning of dental trainees and reduce the difference in training effectiveness among trainees.

(4) Educational strategies: The curriculum focused on how to execute step-by-step clinical training procedures. The instructors in this curriculum were attending dentists, and had more than 20 years of dental clinical experience. The curriculum was consist of 115 courses (Table 1 near here) and each course was taught once a week on every Thursday evening (60 min for each course). The curriculum was divided into three phases (Figure 1 near here). The first phase focused on the basic dental clinical knowledge, such as Periodontology, Endodontics, Oral Maxillofacial Surgery and Oral Mucosal Disease. The second phase was the advanced dental clinical knowledge, including Prosthodontics, Pedodontics,
Orthodontics and other related courses. The third phase was a comprehensive application of the previous two phases, including Oral Implantology and Oral Multidisciplinary diagnosis and treatment.

All the dental trainees in HSFMU were required to attend this integrated curriculum.

(5) Implementation: To ensure that the contents of the curriculum are the latest and most standardized knowledge, avoiding the irregular teaching caused personal factors of lecturing expert, the contents of the integrated clinical curriculum was internally peer reviewed [8] and finally approved and implemented by the Teaching Committee of HSFMU.

(6) Evaluation and feedback: This integrated clinical curriculum was a new attempt and exploration of dental clinical education in China. After being executed for more than three years, the integrated clinical curriculum was evaluated through an anonymous questionnaire survey with the aim to obtain feedback from dental trainees.

Survey of the curriculum

The study was approved by the Ethics Committee of HSFMU (Grant number: 2017-Res-052). A self-administrated questionnaire (Table 2 near here) was used to conduct an anonymous survey to the trainees. The trainees were informed that participation was not compulsory and refusal to take part would not disadvantage to them. But the trainees were encouraged to take part in the survey and informed that their comments are crucial to improve the curriculum. The questionnaire included 5 single-choice questions, an open-ended question, and the satisfaction scores using a Likert-type scale of 1 (very dissatisfied) to 10 (extremely satisfied).

One-way ANOVA was utilized to compare difference between satisfaction scores rated by the four types of dental trainees. Two independent sample t-test was used to analyze whether the trainees of different genders had different satisfaction scores on the curriculum. Fisher's exact probabilities was employed to evaluate the different comment of different types of trainees on whether the curriculum is helpful for them to promote and standardize their clinical skills learning. All analyses were performed using R (version 3.1.1). P<0.05 was considered statistical significance.

Results

The integrated clinical curriculum of Clinical Knowledge in Oral Medicine was developed in September
The contents of the curriculum focused on the diagnosis and treatment steps for specific cases. Lecturers use PowerPoint slides to display pictures of clinical treatment steps and explain the key points and relevant theoretical knowledge of each treatment step to dental trainees.

58 male and 84 female dental trainees completed the survey, and the response rate was 100%. The satisfaction scores of the trainees are shown in Table 3 (Table 3 near here) with a mean satisfaction score of 7.96 (out of 10). The statistics on whether the curriculum is helpful for trainees to promote and standardize their clinical skills learning are shown in Table 4 (Table 4 near here). 91.55% of the trainees reckoned the curriculum was “Very Helpful” or “Helpful” to promote and standardize their clinical skills learning.

One-way ANOVA showed there was no significant difference in satisfaction scores among the four types of dental trainees (Table 5 near here, F=1.53, P=0.209). In terms of different gender, males have similar satisfaction scores with females (Table 6 near here, t=1.20, P=0.233). Furthermore, no significant differences was found among four types of trainees on whether the curriculum is helpful to promote and standardize their clinical skills learning for them (P=0.828).

As for the question of “How often do you think it is appropriate for the curriculum?“, 46 (32.39%) trainees chose “once a week”, 90 (63.38%) trainees chose “once every two weeks”, and 6 (4.23%) trainees chose “once every four weeks”. Regarding the question of “How long do you think it is the most appropriate time for each course?“, 107 (73.35%) trainees chose “60 min”, 32 (22.54%) trainees chose “90 min”, and 3 (2.11%) trainees chose “120 min”.

Trainees also made some suggestions for improving the curriculum, including more detailed explanations of the clinical cases and demonstrations of the clinical treatment steps, and exhibit more pictures about the treatment steps. These indicated that the trainees’ expectations have not been fully met.

Discussions
In the past decades, Chinese government has taken a lot of measures to improve the quality of medical care, while the personnel training is one of the most important measures [9]. As a task of cultivating the clinical skills of medical talents, Chinese hospitals focused on continuously
improvement of the clinical training methods, such as the training skill of clinical instructors, the management of clinical training processes, and the assessment of teaching effectiveness.

Generally speaking, clinical training process emphasizes a personalized one-to-one instruction to guide trainees in a targeted manner based on their personal characteristics [10]. In the daily clinical training process, Teaching Committee of HSFMU also pays attention to the personalized teaching of the trainees' personal characteristics, and encourages the clinical instructors to carry out clinical training according to the trainees' knowledge background, understanding ability and personal characteristics. However, due to historical reasons and the large population of China, the ratio of the number of dentists to the population is still significantly lower than that of developed countries [1].

The clinical instructors in the Chinese hospitals not only need to guide clinical training of trainees, but also need to bear the heavy clinical work and scientific research work. Therefore, the standardized clinical training and personalized teaching time for clinical instructors is limited. Moreover, the personalities of clinical instructors are different from each other, and clinical instructor's different characteristics also affects clinical teaching effectiveness [11, 12]. Therefore, although there are personalized, group-style lectures in clinical training process, it is difficult to achieve complete standardized, unified clinical training effectiveness. It had revealed that the lack of standardization occurs, resulting in discrepancies among training effectiveness [13]. Thus, the unity of clinical training process is important in dental clinical education [14]. In addition, dental trainees need to undergo a range of complex competency training, including theoretical knowledge, clinical experience, critical thinking, and problem solving [15]. What’s more, Albino [16]reported that increasing the teaching of relevant clinical knowledge courses in clinical training can promote trainees' memory, enhance relevant knowledge, and help trainees develop critical skills by applying critical thinking and problem-solving skills. Based on these backgrounds, the integrated clinical curriculum, with an aim of standardize and unified the clinical training process and improve the quality of clinical training, was developed.

According to the statistical results, the dental trainees reckoned that the curriculum was valuable for their clinical skills learning. There was no significant difference in the satisfaction scores between the
four types of trainees (P=0.209) and between the two genders (P=0.233), and the mean satisfaction score of all the trainees was 7.96 (out of 10). According to previous study, this mean satisfaction score can be considered as “very good” (85 to 75 percent) [17]. As for the whether the curriculum was helpful to promote and standardize clinical skills learning for trainees, 91.55% of the trainees reckoned the curriculum was “Very Helpful” or “Helpful”. These results mean that although the four types of trainees had different knowledge background and clinical experience, they showed a positive attitude towards the integrated clinical curriculum.

There might be some explanations for this phenomenon. First of all, as mentioned above, due to the short study time of professional dental courses during their university periods, all four types of trainees mainly receive the education of theoretical knowledge of stomatology, but rarely receive professional and standardized clinical skills education during university period. Secondly, this was a novel teaching method for dental trainees in China, especially the analysis and explanation of the specific medical treatment steps of specific cases, which has practical significance for standardizing and promoting trainees’ clinical diagnosis and treatment. Compared with the pure theoretical teaching, this teaching method is more interesting and more attractive to trainees. The satisfaction scores obtained partially support this hypothesis. Thirdly, careful preparation and standardized teaching for experienced lecturers is an important reason for the trainees to welcome the curriculum. Because the lecturer is one of the decisive factors in the quality of curriculum [18]. Fourthly, some relevant and advanced courses were included, such as how to deal with medical disputes, and medical disputes have gradually increased in China in recent years [19, 20]. Last but not the least, during the curriculum developing, the Teaching Committee of HSFMU had extensively solicited opinions and suggestions from trainees, and the trainees’ requirements have been reflected in the curriculum. The active participation of students can fully mobilize their enthusiasm [21]. The fact that some junior dentists in the HSFMU and dentists from nearby clinics volunteered to attend the curriculum also verified that the curriculum was well designed and welcomed. Moreover, the passing rate of NLME of dental trainees enrolling in HSFMU in recent years has almost reached 100%, while the average passing rate of NLME is less than 40%. And the number of trainees who have won awards
in various clinical skills competitions has also increased in recent years. Therefore, although group-based lectures have proven to be an effective way of teaching [22, 23], this standardized integrated clinical curriculum was popular among dental clinical trainees in China. However, there was still a small number of trainees commented satisfaction score of 6 (out of 10) on the curriculum and chose “general” as the answer on “whether the curriculum is helpful to promote and standardized the clinical skills learning for you”, indicating that although the curriculum had a positive effect on promoting and standardizing trainees’ clinical skills learning, it does not fully meet the expectations of all trainees.

According to trainees’ suggestions and the results of survey, since January 2018, the frequency of the curriculum has been adjusted to once every two weeks, and the lecturers were informed to exhibit more pictures to describe more specific details of the clinical treatment in the course.

Many dental educators believe that there is a lack of effective articulation between traditional theoretical education and practical teaching, and emphasize the concept of integrated dental education [24]. Integrating theoretical knowledge of dentistry and clinical skill education is highly regarded by several researches [25-27]. The integrated clinical curriculum of Clinical Knowledge in Oral Medicine covers all clinical branches of dentistry and integrated the clinical skills. This is in line with the integration of the dental education curriculum promoted by the Institute of Medicine [28]. It is necessary to provide relevant theoretical courses for clinical intern students [29]. Therefore, this integrated clinical curriculum was a beneficial attempt to improve the quality of dental clinical training and suitable for Chinese dental trainees. The curriculum may also be suitable for some other developing countries, such as India.

**Strengths and limitations**

The integrated clinical curriculum initiate a new standardized and unified clinical training methods for dental trainees. The main limitations of present study is that there was a lack of investigation of the instructors. The instructors can objectively and directly evaluate the degree of improvement of the trainees’ clinical skills because they are in direct contact with the trainees. Therefore, the survey to instructors should be carried out in the future.
Conclusions
The present findings suggest that the dental trainees appreciated the integrated clinical curriculum of Clinical Knowledge in Oral Medicine. This integrated clinical curriculum is considered suitable for current condition for dental clinical education in China.

Abbreviations
NMLE: National Medical Licensing Examination; HSFMU: Hospital of Stomatology of Fujian Medical University.

Declarations

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Availability of data and materials
The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Contributors
All authors have approved the submitted version. CY Zhang: Conception, design, drafting manuscript. F Chen: Data analysis and interpretation. SZ Wang: acquisition of data. H Yu: Design, revising manuscript, corresponding author. H Cheng: Conception, revising manuscript, corresponding author. J Chen: Conception, design.

Ethics approval and consent to participate
The study was approved by the Ethics Committee of HSFMU. All participants provided verbal consent to participate in the survey and their participation and attendance was voluntary.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.
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Tables

Table 1. Contents of the Integrated Clinical Curriculum of Clinical Knowledge in Oral Medicine

| No. | Contents of the Clinical Knowledge in Oral Medicine | Discipline / Topic |
|-----|-----------------------------------------------------|-------------------|
| 1   | Systemic and topical medication for periodontitis   | Periodontics      |
| 2   | Clinical procedures for periodontal flap surgery    | Periodontics      |
| 3   | Clinical treatment of aggressive periodontitis      | Periodontics      |
| 4   | Clinical operation of crown extension               | Periodontics      |
| 5   | Periodontal tissue treatment during prosthodontics  | Periodontics      |
| 6   | Loose teeth fixation for periodontal disease        | Periodontics      |
| 7   | Clinical diagnosis and treatment of gingival hyperplasia | Periodontics |
| 8   | Periodontal treatment before and after implanting   | Periodontics      |
| 9   | Clinical examination of periodontal disease         | Periodontics      |
| 10  | Common bone graft materials and barrier membranes for GBR | Periodontics |
| 11 | Tips for guiding tissue regeneration operations | Periodontics |
| 12 | Selection of periodontal surgery and design of incision | Periodontics |
| 13 | Clinical examination of gingival biotype | Periodontics |
| 14 | Measurement and determination of root canal working length | Endodontics |
| 15 | Clinical treatment of young permanent dental pulp disease | Endodontics |
| 16 | Treatment of complications and failure of root canal therapy | Endodontics |
| 17 | Clinical treatment of dental erosion | Endodontics |
| 18 | Clinical treatment steps for wedge-shaped defect of teeth | Endodontics |
| 19 | Consideration of clinical treatment failure cases of root canal therapy | Endodontics |
| 20 | Application of osmotic resin in the treatment of early caries | Endodontics |
| 21 | Clinical treatment details of root canal therapy | Endodontics |
| 22 | Preparation and strategy of curved root canal | Endodontics |
| 23 | Diagnosis of early caries | Endodontics |
| 24 | Treatment of poor root canal sealing caused by chronic apical periodontitis | Endodontics |
| 25 | Clinical skills of root planing | Endodontics |
| 26 | Clinical application of machine-made nickel-titanium instruments | Endodontics |
| 27 | Prepare the root canal step by step | Endodontics |
| 28 | Tips for the treatment of deciduous teeth | Endodontics |
| 29 | Difficulty assessment of root canal treatment | Endodontics |
| 30 | Diagnosis and treatment of root bifurcation lesions | Endodontics |
| Page | Title                                                                                      | Subject                          |
|------|-------------------------------------------------------------------------------------------|----------------------------------|
| 31   | Key points of filling technology of composite resin                                        | Endodontics                      |
| 32   | Evaluation and treatment strategy for root canal retreatment                                | Endodontics                      |
| 33   | Diagnosis and treatment of oral mucosal ulcer diseases                                      | Oral mucosal Disease             |
| 34   | Examination and treatment of precancerous lesions of oral mucosa                            | Oral mucosal Disease             |
| 35   | Diagnosis and treatment of oral mucosal white lesions                                       | Oral mucosal Disease             |
| 36   | Relationship between bad habits and oral mucosal diseases                                    | Oral mucosal Disease             |
| 37   | Performance of sexually transmitted diseases in the oral mucosa                             | Oral mucosal Disease             |
| 38   | Clinical basic knowledge of temporomandibular joint disease                                | Oral Maxillofacial Surgery       |
| 39   | Principles of diagnosis and treatment of dental trauma                                      | Oral Maxillofacial Surgery       |
| 40   | Micro-vascular surgical suture technique                                                    | Oral Maxillofacial Surgery       |
| 41   | Standardized clinical examination procedures for common diseases in oral and maxillofacial surgery | Oral Maxillofacial Surgery       |
| 42   | Normative operation of maxillary sinus lifting technique                                    | Oral Maxillofacial Surgery       |
| 43   | Complications and prevention of tooth extraction surgery                                    | Oral Maxillofacial Surgery       |
| 44   | Application of digital surgical technique in oral maxillofacial surgery                     | Oral Maxillofacial Surgery       |
| 45   | Microscopic apical surgery                                                                 | Oral Maxillofacial Surgery       |
| 46   | Etiology, diagnosis and clinical manifestations of longitudinal root fracture                | Oral Maxillofacial Surgery       |
| 47   | Application of 3D printing in accurate reconstruction of the face                           | Oral Maxillofacial Surgery       |
| 48   | Minimally invasive extraction of impacted teeth                                             | Oral Maxillofacial Surgery       |
| Page | Title                                                                 | Specialty         |
|------|------------------------------------------------------------------------|-------------------|
| 49   | Cosmetic repair treatment steps for tooth defects                     | Prosthodontics    |
| 50   | Theoretical basis and clinical application of aesthetic repair resin cement | Prosthodontics    |
| 51   | Clinical treatment of precision attachment denture                     | Prosthodontics    |
| 52   | Dental preparation steps for all-ceramic crowns                        | Prosthodontics    |
| 53   | Selection and application of dental impression materials               | Prosthodontics    |
| 54   | Clinical diagnosis and treatment for complete dentures                 | Prosthodontics    |
| 55   | Clinical treatment steps for complete dentures                         | Prosthodontics    |
| 56   | Clinical application of composite resin inlay restoration              | Prosthodontics    |
| 57   | Skill of clinical operation in prosthodontic aesthetics                 | Prosthodontics    |
| 58   | Application of ultra-thin veneer in non-invasive cosmetic restoration  | Prosthodontics    |
| 59   | Chair-side processing steps for temporary restorations                 | Prosthodontics    |
| 60   | Selection and use of all-ceramic materials for restorations            | Prosthodontics    |
| 61   | Tips for clinical consultation and treatment planning for prosthetics  | Prosthodontics    |
| 62   | Gingival retraction technique and silicone rubber impression technology | Prosthodontics    |
| 63   | Clinical application of magnetic retainers                              | Prosthodontics    |
| 64   | Systemic disease in children’s oral cavity                             | Pedodontics       |
| 65   | Treatment and prognosis of dental trauma in children                   | Pedodontics       |
| 66   | The Stainless Steel Crown technique and how to use it in children      | Pedodontics       |
| 67   | Behavioral management in children’s oral treatment                     | Pedodontics       |
| Page | Title                                                                 | Section   |
|------|----------------------------------------------------------------------|-----------|
| 68   | Modern orthodontic treatment and correction goals                     | Orthodontics |
| 69   | Risks and the control of orthodontic treatment                        | Orthodontics |
| 70   | Cortical incision accelerates orthodontic tooth movement              | Orthodontics |
| 71   | Target of orthodontic treatment                                       | Orthodontics |
| 72   | Clinical application of the technique of pushing the maxillary molars to the distal correction | Orthodontics |
| 73   | Clinical treatment of maxillary impacted canine                        | Orthodontics |
| 74   | Clinical examination of reverse bite                                  | Orthodontics |
| 75   | The effect of orthodontic treatment on facial shape                    | Orthodontics |
| 76   | Early correction and treatment of malocclusion                        | Orthodontics |
| 77   | Application of extraction of molars in orthodontic treatment          | Orthodontics |
| 78   | Clinical application of bracketless invisible orthodontic technique   | Orthodontics |
| 79   | The application of digital technology in orthodontic clinic           | Orthodontics |
| 80   | Relationship between canines and orthodontics                         | Orthodontics |
| 81   | Clinical application of early correction of malocclusion              | Orthodontics |
| 82   | Temporomandibular joint consideration in orthodontic treatment        | Orthodontics |
| 83   | Early correction of III types of malocclusion                         | Orthodontics |
| 84   | Standardized bonding step for all-ceramic veneers                     | Bonding    |
| 85   | Orthodontic bracket bonding skills                                    | Bonding    |
| 86   | Dentin bonding technology                                             | Bonding    |
| Page  | Title                                                                 | Subject Area                  |
|-------|----------------------------------------------------------------------|-------------------------------|
| 87    | Standardization steps for oral hygiene education                     | Oral hygiene education        |
| 88    | Dental phobia and painless treatment                                 | Dental phobia                 |
| 89    | Temporomandibular joint disease from clinical cases                   | Temporo-mandibular joint      |
| 90    | Standard disinfection procedure for artificial restorations          | Disinfection                  |
| 91    | Application of laser in the treatment of dentistry                    | Laser                         |
| 92    | Method of oral epidemiological investigation                          | Oral epidemiological          |
| 93    | Dental bleaching technology                                           | Bleach                        |
| 94    | Polishing of all-ceramic materials                                   | Dental materials              |
| 95    | Risk and legal issues in dentistry practice                           | Legal                         |
| 96    | Risk prevention of oral medical disputes                              | Risk evaluation               |
| 97    | Application of CBCT in stomatology                                   | Radiology                     |
| 98    | Clinical application of fluoride                                     | Preventive of dentistry       |
| 99    | Choice of implant treatment in case of insufficient bone mass         | Oral Implantology             |
| 100   | Bone increment technique in implant treatment                         | Oral Implantology             |
| 101   | Clinical practice of minimally invasive implant surgery               | Oral Implantology             |
| 102   | Clinical treatment of autogenous bone grafting                        | Oral Implantology             |
| 103   | Immediately implanted and instantly repaired treatment technology     | Oral Implantology             |
| 104   | Treatment ideas for implant cases                                    | Oral Implantology             |
| 105   | Risk assessment of implanting                                         | Oral Implantology             |
| 106   | Application of implant guide in the treatment of edentulous implants  | Oral Implantology             |
| 107   | Essential surgical elements for successful implanting                | Oral Implantology             |
Table 2. Questionnaire on integrated clinical curriculum of Clinical Knowledge in Oral Medicine

1. What is your gender?
A. Male   B. Female

2. What is your identity?
A. Intern   B. Visiting dentist   C. Postgraduate   D. Resident

3. Please make a satisfaction score for the curriculum on the Likert-type scale.
(1 refers to very dissatisfied and 10 refers to extremely satisfied)

   1  2  3  4  5  6  7  8  9  10

4. Whether the curriculum is helpful to promote and standardized the clinical skills learning for you? (single selection)
A. Very helpful   B. Helpful   C. General   D. No helpful

5. How often do you think it is appropriate for the curriculum?(single selection)
A. Once a week   B. Once every two weeks   C. Once every four weeks

6. How long do you think is the most appropriate time for each course?(single selection)
A. 60 min   B. 90 min   C. 120 min

7. What suggestion or opinions do you have about the curriculum? (open-ended)

Table 3. The satisfaction scores of the trainees comment on the curriculum
| Identity         | Gender | Score-5 | Score-6 | Score-7 | Score-8 | Score-9 | Score-10 |
|------------------|--------|---------|---------|---------|---------|---------|----------|
| Interns          | Male   | 0       | 0       | 2       | 5       | 3       | 1        |
|                  | Female | 0       | 2       | 4       | 6       | 3       | 0        |
| Visiting dentists| Male   | 0       | 1       | 2       | 8       | 5       | 2        |
|                  | Female | 0       | 2       | 0       | 6       | 2       | 3        |
| Postgraduates    | Male   | 1       | 1       | 5       | 3       | 2       | 1        |
|                  | Female | 0       | 2       | 6       | 10      | 1       | 3        |
| Residents        | Male   | 0       | 0       | 4       | 7       | 3       | 2        |
|                  | Female | 0       | 3       | 8       | 17      | 5       | 1        |
| Total            |        | 1       | 11      | 31      | 62      | 24      | 13       |

Table 4. Comment of on whether the curriculum is helpful to promote and standardized the clinical skills learning for trainees

| Identity         | Gender | Very helpful | Helpful | General | No helpful |
|------------------|--------|--------------|---------|---------|------------|
| Interns          | Male   | 4            | 6       | 1       | 0          |
|                  | Female | 2            | 12      | 1       | 0          |
| Visiting dentists| Male   | 7            | 10      | 1       | 0          |
|                  | Female | 3            | 10      | 0       | 0          |
| Postgraduates    | Male   | 1            | 12      | 0       | 0          |
|                  | Female | 8            | 9       | 5       | 0          |
| Residents        | Male   | 7            | 8       | 1       | 0          |
|                  | Female | 6            | 25      | 3       | 0          |
| Total            |        | 38           | 92      | 12      | 0          |

Table 5. One-way ANOVA results of satisfaction scores for four different types of trainees
Table 6. Statistical analysis of scores of trainees with different genders

| Group   | No. | Mean | Std. Dev. | 95% Conf. Interval | P   |
|---------|-----|------|-----------|--------------------|-----|
| Male    | 58  | 8.086| 1.081     | 7.802 - 8.370      | 0.233|
| Female  | 84  | 7.869| 1.050     | 7.641 - 8.097      |     |

Figures

Figure 1

The structure of the Integrated Clinical Curriculum