

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 analyze 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 2014. 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
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
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
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 Ⅹ types of malocclusion	Orthodontics
84	Standardized bonding step for all-ceramic veneers	Bonding
85	Orthodontic bracket bonding skills	Bonding
86	Dentin bonding technology	Bonding
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
108	Occlusal considerations for implant restoration	Oral Implantology
109	Key points of occlusal adjustment	Multidisciplinary
110	Application of rubber barrier moisture isolation technology	Multidisciplinary
111	Relationship between periodontal health and artificial restoration design	Multidisciplinary
112	Clinical treatment steps for cracked teeth	Multidisciplinary
113	Clinical application of immediate loading technique for edentulous jaw implant	Multidisciplinary
114	Multidisciplinary combined orthodontic treatment	Multidisciplinary
115	Periodontal therapy in adult orthodontic treatment	Multidisciplinary

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		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

Source	SS	df	MS	F	p
Between Groups	5.1475	3	1.7158	1.530	0.209
Within Groups	154.5990	138	1.1203		
Total	159.7465	141	1.3230		

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

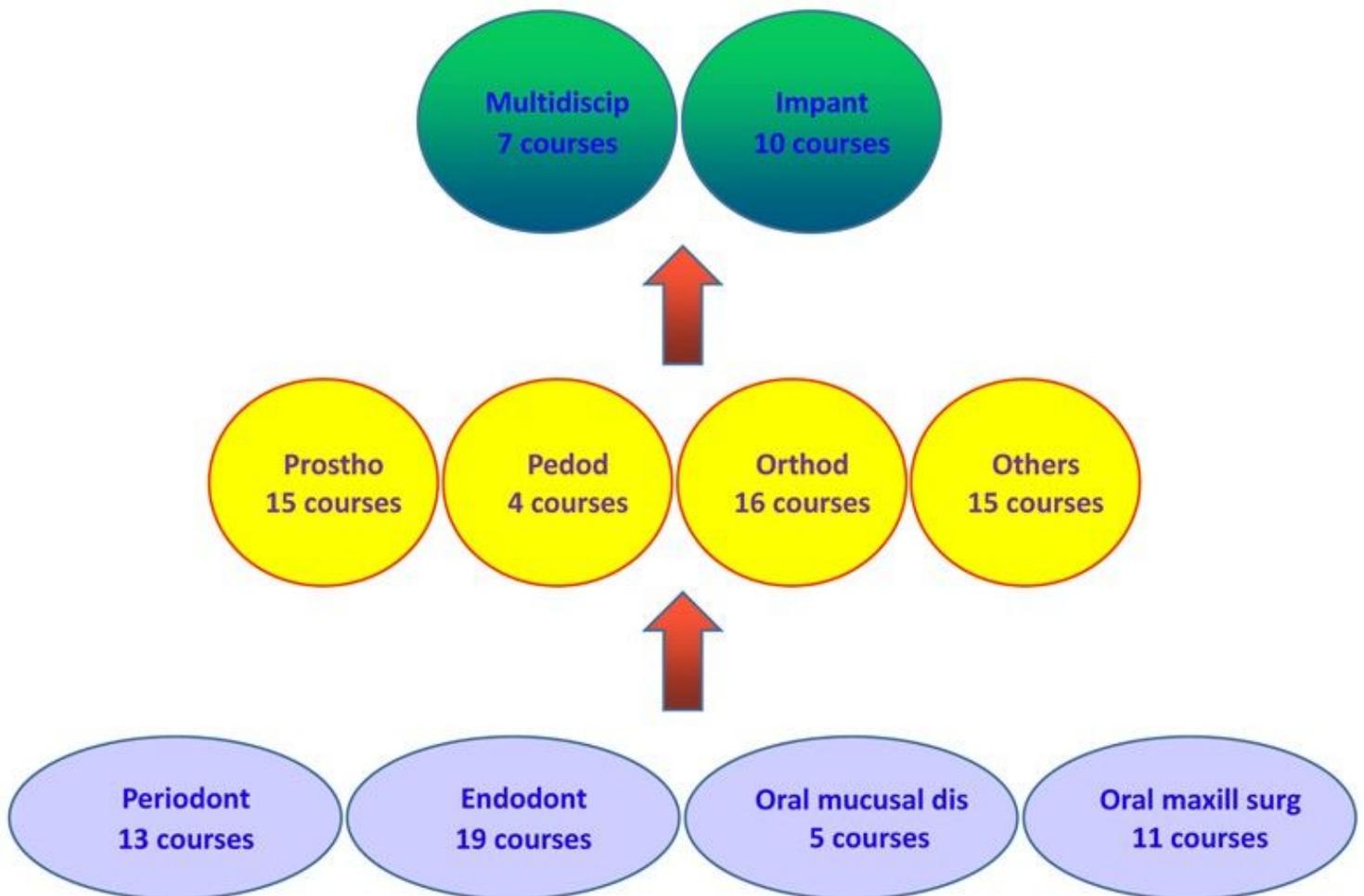


Figure 1

The structure of the Integrated Clinical Curriculum