The Consistency of Case Selection in an Integrated Student Clinic of a Malaysian Dental School

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Abstract

To evaluate the consistency of case preferences among students across all 3 clinical years.

Data was retrieved retrospectively through forms filled by the student prior every clinical session of Comprehensive Care Clinic in September, October and November 2017. Forms were filled only by Year 3, Year 4 and Year 5 students. Demographic data of students as well as the case they did were retrieved. Data was analyzed using SSPS version 20, Two-way ANOVA, pairwise comparison with Bonferroni correction were applied to determine the association, p value set to be <0.05.

196 forms were retrieved with a total of 1994 cases. There was a significant association found between gender and periodontal case (p=0.020) and between the year of study with Endodontics, Prosthodontics, Periodontics, Orthodontics, Oral Surgery (OS), Operative Dentistry (ODE) and Examination and Diagnosis (E&D). No association was found between the year of study and Preventive Dentistry (DHE) case.

Preferences of cases treated by students in Comprehensive Care Clinic was influenced by disciplines except for Periodontic and Endodontic cases.

Clinical article (J Int Dent Med Res 2019; 12(4): 1511-1515)

Keywords: Consistency, Case Selection, Student Clinic.

Received date: 15 December 2018 **Accept date:** 28 May 2019

Introduction

In the last decade, the dental school curriculum around the world has faced reform. This change was due to an observation made by Institute of Medicine (IOM) in their review of the dental education that was published in 1995. The review claimed that the system was outdated, unrelated, filled with unnecessary information and driven by disciplines. Besides that, the teaching methods practiced were also very conventional which was one of the main reasons for the curriculum's rigidity. This review had triggered the American Dental Education Association (ADEA) then designed an oversight committee in 2005, the Commission on Change and Innovation in Dental Education (ADEA-CCI), to discuss and lead the implementation of changes in the education system. A curriculum reform was implemented including integration that enables learners to realise how multiple different concepts and/or processes are linked. This concept was well embraced by many other branches of health science [1,10,14-16,18].

The need for change was observed since the 1930s and the first real revision was done a decade later. The curriculum, however, remained the same up to the early twentieth century until the need for inclusion of oral and general health correlation, the value of scientific inquiry and integration of disciplines were noted. From the revision by the Commission of Change and Innovation in Dental Education in their 2005 report, one of the major changes included comprehensive patient care in the clinical program from previously disciplined based care. This integrated approach was first implemented the following year in the USA but in phases[2,18-19]. The main idea of the currently implemented integrated system is to intertwine teaching of

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medical and dental science for students to interrelate theoretical and practical knowledge learned during the course to avoid premature specialization when they practice. Its aim is to produce dentists that are ethical, comprehensive and able to provide effective integrated treatment plans for their patients. Students are also moulded to obtain the ability to get good clinical history, establish a diagnosis, plan and execute multiple dental procedures in an integrated approach. They are also expected to learn to respect the needs and motivation of the patient allowing for better prognosis with a potential of stomatognathic and functional recovery. Also, good interpersonal communication skills with patients and colleagues are inculcated in this curriculum. Most of the patients treated should require treatment from multiple disciplines (at least 3) and varied difficulties hence stimulating the students to correlate the various presented and diagnosed oral pathologies and organize the information based on their theoretical and practical knowledge[3,16].

This exposure to multiple cases in various disciplines during their clinical program allows students to fully experience the aspects of the world of dentistry thus allowing them to have the full picture of future practice and be able to determine their niche. Dental students that were exposed to a comprehensive clinical structure in their final year felt that exposure to complex cases in this system diversified their clinical experience and improved their clinical decision-making ability by 79%[4]. An observation was made to determine the Consistency of Cases Selection by Students in Comprehensive Care Clinic of the Faculty of Dentistry, University Teknologi MARA (UiTM). The aims of this study were to evaluate the consistency of case preferences among students of the same year, case preference across all 3 clinical years and case preferences of students of different genders.

Materials and methods

This retrospective study was done by distributing standard forms prior to every clinical session of Comprehensive Care Clinic (Year 3, 4 and 5) and asking students to indicate which cases they will be doing (ODE, Prosthodontics, Periodontics, Orthodontics, Oral Surgery, Endodontics, DHE, and E&D during that session. The forms contain of the student's name and identification and they are required to simply tick the boxes corresponding to the cases they will be doing on that day. These sheets were collected at the end of the sessions and tabulated in Excel form for the first 3 months of the semester (September, October and November 2017). The data was then analysed using SSPS version 20(USA), Two-way ANOVA, pairwise comparison with Bonferroni correction were applied to determine the association, p value set to be <0.05.

Results

196 forms were retrieved and analysed. Demographic characteristics of students involved in this study are described as in Table 1, based on their year of study and gender. The numbers of female students were higher compared to male, while there were more year 3 students compared to year 4 and year 5.

Variables	N (%)
Year	
3	72 (36.7)
4	69 (35.2)
5	55 (28.1)
Gender	
Male	32 (16.3)
Female	164 (83.7

Table 1. Demographic characteristics (n=196).

The total number of cases treated by students is in Comprehensive Care Clinic between September until November 2017 were 1994 cases as shown in Table 2. E&D was found to have the highest number followed by ODE, Periodontics, Prosthodontics, Endodontics, Orthodontics, OS and DHE.

Cases	N			Overall N (%)
	Year 3	Year 4	Year5	
E&D	220	349	112	681 (34.15)
ODE	78	261	122	461 (23.12)
Periodontics	64	287	32	383 (19.21)
Prosthodontics	29	47	112	188 (9.43)
Endodontics	2	56	61	119 (5.97)
Orthodontics	0	112	4	116 (5.82)
OS	0	25	7	32 (1.60)
DHE	5	8	1	14 (0.70)

Table 2. Total number of cases treated by students (n=1994 cases).

Case	Adjusted Mean (95% CI)	F statistics (df)[a]	P value

ODE	Gender			
	Male	2.6 (1.90, 3.26)	0.464 (1, 192)	0.496
	Female	2.3 (2.02, 2.62)		
	Year			
	3	1.2 (0.65, 1.69)	34.064 (2, 192)	<0.001*
	4	3.9 (3.34, 4.41)		
	5	2.3 (1.73, 2.86)		
Prosthodontics	Gender			
	Male	0.9 (0.49, 1.24)	1.046 (1,192)	0.308
	Female	1.1 (0.91, 1.24)		
	Year			
	3	0.3 (0.04, 0.62)	40.481 (2, 192)	<0.001*
	4	0.6 (0.31, 0.90)		
	5	2.0 (1.67, 2.28)		
Periodontics	Gender			
	Male	1.3 (0.76, 1.82)	5.482 (1, 190)	0.020*
	Female	2.0 (1.75, 2.22)		
	Year			
	3	0.9 (0.41, 1.39)	40.106 (2, 190)	<0.001*
	4	3.5 (3.00, 4.03)		
	5	0.5 (-0.01, 1.01)		
Orthodontics	Gender			
	Male	0.6 (0.28, 0.98)	0.144 (1, 192)	0.705
	Female	0.6 (0.40, 0.71)		
	Year			
	3	-0.03 (-0.24, 0.29)	56.272 (2, 192)	<0.001*
	4	1.6 (1.38, 1.92)		
	5	0.1 (-0.20, 0.39)		
OS	Gender			
	Male	0.2 (0.04, 0.35)	0.172 (1, 192)	0.679
	Female	0.2 (0.09, 0.23)		
	Year			
	3	0.013 (-0.11, 0.14)	11.366 (2, 192)	<0.001*
	4	0.4 (0.25, 0.50)		
	5	0.14 (0.01, 0.27)		
Endodontics	Gender			
	Male	1.0 (0.64, 1.37)	4.376 (1, 192)	0.038
	Female	0.6 (0.42, 0.74)		
	Year			
	3	0.2 (-0.11, 0.46)	17.967 (2, 192)	<0.001*
	4	1.0 (0.68, 1.25)		
	5	1.2 (0.93, 1.54)		
DHE	Gender			
	Male	0.03 (-0.08, 0.15)	0.440 (1, 192)	0.508
	Female	0.08 (0.02, 0.13)		
	Year			
	3	0.1 (-0.03, 0.14)	1.294 (2, 192)	0.277
	4	0.1 (0.01, 0.19)		
	5	0.01 (-0.09, 0.10)		
E&D	Gender			
	Male	3.0 (2.24, 3.71)	1.430 (1, 190)	0.233
	Female	3.46 (3.13, 3.79)		
	Year			
	3	3.6 (2.87, 4.24)	11.895 (2, 190)	<0.001*
	4	4.2 (3.53, 4.96)		
	5	1.9 (1.15, 2.55)		

*Two-way ANOVA, pairwise comparison with Bonferroni correction

Table 3. Comparison of cases among year of study and gender by Two-way ANOVA (n=196).

A two-way ANOVA test was performed to test the association between year of study and gender towards the number of cases treated (Table 3). With p- value set to be <0.05, results show that there was a significant association found between the year of studies and number of cases for ODE, Prosthodontics, Periodontics, Orthodontics, OS, Endodontics, and E&D while no association was found between year of study with number of DHE case. On gender, only Periodontic cases were found to have a significant association where female students were found to have a higher number of Periodontic cases compared to male students.

Discussion

The concept of an integrated clinical curriculum in dentistry or, referred to as a, Comprehensive Care (CC) curriculum, is aimed to produce graduates with a strong general practicing foundation. This curriculum also benefits dental students in their daily routine as dental practitioners by enabling them to provide their patients with an ethical, comprehensive, and efficiently integrated treatment plan [3].

Discipline-based clinical instruction had prevailed in many schools up till the 1990s. This curriculum was found to provide a barrier to integration of Comprehensive Care in the patient's best interest due to an isolation of technical procedures by departmental silos [5,6].

Noting that the cost of patient care in public institutions rose about 35 percent between 1990 and 2000 and that most clinical operations are subsidized by their institutions, a majority of clinical educational models nowadays utilize comprehensive care approaches in which students are expected to manage most, if not all, aspects of an individual patient's dental care[7]. Among the first dental schools to implement comprehensive clinical patient care were those at Case Western Reserve University and the University of Missouri-Kansas [2]. Ryder reported on the evolution and revolution of the curriculum reform process at the University of California, San Francisco, School of Dentistry (UCSF)[8]. They developed a more streamlined and integrated curriculum based on four thematic streams; Biomedical Sciences, Dental Sciences, Preventive and Restorative Dentistry and Patient-Centred Care Streams. In patient-centred care stream, comprehensive care continued to be the emphasis. In this curriculum, the students are

trained to take a good clinical history, establish diagnoses, plan and execute multidisciplinary dental procedures in an integrated approach. In addition to it, CC curriculum also helps the student develop interpersonal communication skills with the patient and their colleagues. Prosthetic rehabilitation, restorative dentistry, periodontology, and preventive and community dental medicine are the main areas of action for the integrated curricular unit[3]. This finding agreed with the report that dental specialties remain major factors in the organization of students' learning in the clinic[9,17]. To date, studies on case preferences of students brought to the clinic is not well documented.

The present study evaluated case preferences by disciplines among dental students involved in an integrated clinical curriculum in the Faculty of Dentistry, Universiti Teknologi MARA, Malaysia. A structured form with various disciplines columns was provided to the students during their first semester in integrated clinical sessions. The students will indicate the clinical cases that they will manage during the session. Several specialties are involved in this study to assess case preferences by clinical year students in Year 3, 4 and 5 (n=196). The disciplines involved are Operative Dentistry (ODE), Prosthodontics (Prostho), Periodontology (Perio), Orthodontics (Ortho), Oral Surgery (OS), Endodontics (Endo) and Preventive Dentistry (DHE). The Year 3 students have the least clinical experience while the Year 5 students are the most advanced. It is that suggested that the integrated curriculum should be as heterogeneous as possible, facilitated by teachers from the various dental specialties with good critical and pedagogue's capacities. This allows the student to develop high-quality skills in a short period of time[3].

Inconsistencies in case preferences among students of the same year as seen in the results were also reflected between the 3 observed years. Notably, from the descriptive statistical analysis, in each clinical session, Year 3 students of an integrated curriculum (which is the beginning of their clinical years) presented on average 3 patients for their general examination, diagnosis and treatment planning (E &D). This is the core case they should present in CC clinic which strongly relates to different needs of patient's oral health. While the least cases brought to the clinic were Endodontic cases. This is in line with Ryder *et al.* (2008) proposed that the first clinical year to include basic skills in patient interviewing, examination, communication, diagnostic imaging, and infection control.

The preference of cases or patients brought to the clinic has changed in Year 5 where all disciplines are equally distributed. However, a greater inclination towards Prosthodontic and Operative Dentistry cases (2 patients for each student) was noted. The number of students bringing Periodontic and Orthodontic cases is significantly reduced in their final year (Year 5). Students would have become more independent, improved their judgment and refined their skills of diagnosing, managing, and treating patients in the comprehensive care setting and in community clinics during their final year [8].

Two-way ANOVA showed a significant difference of case preference across the disciplines among all three clinical years students ($p<0.001$) gender. Based on the descriptive analysis in Table 2, general examination and diagnosis were the most preferred case across the clinical years. Year 4 students presented a significantly higher number of the case in comparison to Year 3 and Year 5. The least preferred cases were OS and DHE Cases. This is because designated sessions were allocated to them in their timetable and students were advised to bring all difficult cases during these allocated sessions. In Year 4, most of the students in CC clinic brought Periodontics cases followed by ODE and Orthodontic cases. These suggested in the second clinical year, sessions should include patient examination, periodontal and restorative patient care under close supervision[8].

However, in Year 5, the number of cases in Periodontics, ODE, and Orthodontics were reduced significantly. The number of Prosthodontics and Endodontics cases treated by the students were increased significantly from Year 3 to Year 5 ($p<0.001$). This is maybe dependant on the fact that some cases relied on faculty requirements such as expected clinical experience or minimum clinical expected.

A total of 196 students have been assessed in CC clinic. 16.3 % of the total number of clinical years students were male (n=32) and the remaining 83.7% were female (n=164). Two-way ANOVA analysis shows a significant

difference of cases brought by male and female students which is Periodontic (p=0.02) and Endodontic (p=0.038) disciplines throughout their clinical years. This may be due to the patient-assignment process that requires the involvement of such disciplines. Other cases in ODE, Prosthodontics, Orthodontics, OS and DHE disciplines were equally treated by male and female students. These findings were accidentally discovered during the descriptive analysis of case preferences among students in the clinic. Further studies on this matter should be carried out to investigate whether there is any inclination towards gender in their case preferences.

Efficiency and effectiveness of the CC curricular unit teaching system can and should be evaluated by the productivity and quality of the work that each student develops in treating patients. This is directly associated with the level of theoretical understanding and practical execution of the students. Some important elements were missing in the integrated curriculum such as the development of critical thinking skills and the acquisition of skills needed for students to become lifelong learners[8]. These elements should be further investigated to ensure the successful establishment and implementation of the integrated curriculum in dental schools.

Conclusions

Consideration of the concept of an integrated clinical curriculum is essential for the future of dental education. It is vital for students to obtain good theoretical and clinical knowledge before they embark in the management of their patients. This is to ensure a patient-centred delivery system is successfully achieved. In this study, we found that, in their first clinical year, more basic general and examination cases and periodontal cases were selected by the students followed by Operative Dentistry, Orthodontics, Endodontics and Prosthodontic cases. There is no gender bias in treating cases by disciplines except for Periodontic and Endodontic cases.

Declaration of Interest

The authors report no conflict of interest.

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