

Pediatric Dentistry Clinical Education Venues Evaluation by Pre and Post-Doctoral Students

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Objective: To evaluate dental students' perspectives about pre- and post-doctoral pediatric dentistry education venues. **Study design:** Surveys with visual analog scales (from 0 to 100) measuring the educational contribution of pediatric dentistry venues were conducted. The pre-doctoral venues included a 3rd year university twilight clinic (UTC), a 3rd year urban community based clinic (CBC) and 4th year mobile clinics (MCs). The post-doctoral venues included treatment of children under general anesthesia, oral sedations, a regular clinic (no sedations), seminars, journal club, case conferences and studying for the American Board of Pediatric Dentistry. **Results:** Analyses of variance between the scores indicated that the 3rd year CBC score (68.2 ± 4.5) was statistically significant higher ($p = .007$) than the one for the 3rd year UTC score (44.9 ± 6.1). The 4th year students' MCs score (61.4 ± 4.0) was statistically significant higher than their retrospective scores for the 3rd year CBC (56.4 ± 4.4) or UTC (42.2 ± 4.9) scores ($p = .03$ and $.004$ respectively). Among the didactic or clinical post-doctoral venues, the regular clinic and the seminars received the highest scores (84.3 ± 1.7 and 71.6 ± 2.8 respectively). **Conclusion:** pre-doctoral community-based clinical education and post-doctoral regular university based clinic are considered by students to provide the main contribution to pediatric dental education.

Key words: Education, Dentistry, Pediatric Dentistry

INTRODUCTION

The opportunity to practice a wide variety of clinical procedures while in dental school has a crucial effect on the students' education, as the educational experiences concerning the treatment of pediatric dental patients will shape future dental care providers' attitudes and professional behavior.¹ Accordingly, due to the belief that many practitioners are not confident or adequately trained to treat the very young and adolescent patients, the American Dental Association (ADA) House of Delegates adopted Resolution 59H-2000, that states that the ADA Commission on Dental Accreditation should review the pre-doctoral education standard

2.25 regarding pediatric dentistry, to assure adequate and sufficient clinical skills of graduates.² Furthermore, due to the lack of access to dental care for children in the United States of America, it seems crucial to carefully evaluate undergraduate dental curricula to ensure that future dental care providers receive sufficient and meaningful clinical experiences concerning the treatment of child patients in underserved areas.¹

While university-based clinics have been characterized as providers of largely diagnostic and preventive procedures but few restorative opportunities, community-based dental clinics provide the opportunity to enhance pediatric pre-doctoral student clinical experiences in both quantity and diversity.^{3,4} It has been also suggested that community health centers dental clinics may facilitate curriculum adjustments, maximize revenue, and increase access to dental care.⁴ Accordingly, by the year of 2003 in the United States two-thirds of pediatric dentistry programs had external rotations for pre-doctoral students: 69% at city public health clinics, 63% at hospital clinics, 60% at community health clinics, and 44% in mobile clinic school-based programs.²

While the benefits of community-based pediatric dentistry clinical education have been reported by faculty,^{3,4} a literature search did not reveal manuscripts that report a quantitative comparison of students' perspectives about different pediatric dentistry clinic or didactic venues on their dental education. Therefore, the purpose of the present manuscript was to describe and compare perspectives about the degree of contribution of pre- or post-doctoral education venues to pediatric dental education.

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MATERIALS AND METHOD

This study was approved by the Institutional Review Board (IRB) of the University of Kentucky. The 4-year pre-doctoral University of Kentucky College of Dentistry (UKCD) curriculum includes pediatric dentistry clinical education in the 3rd and 4th years at the following venues:

1. A University-based twilight clinic (UTC)
Third year students rotate at a UTC located at the UKCD, which is part of “University of Kentucky Health Care Center®”. At this time of the day, free parking is available and payments are made by insurance, or based on the family income (sliding scale).
2. A urban community based clinic (CBC).
Third year students rotate at a CBC which is located at the Family Care Center in the city of Lexington, Kentucky. Families are not required to pay for services provided at the CBC. Easy access and free parking is available for this clinic.
3. Mobile clinics (MCs)
The 4th year students rotate at 2 UKCD pediatric dentistry mobile clinics. One provides treatment at the city of Lexington public schools and one travels to schools located at different under-served rural or small city locations in Kentucky. Once the clinic arrives at the school, a teacher brings the children (for whom the parents previously provided informed consent) to the mobile clinic. When a scheduled for treatment child is unavailable, an unscheduled child is brought for treatment. The treatments are provided at no cost to the parents.

Near to the end of the academic year, hard copies of a survey were distributed to 3rd and 4th-year UKCD students, in a classroom just after completion of a lecture. The students were advised on the purpose of the survey, the fact that the survey was voluntary and anonymous, and on how to complete the survey. The survey included basic demographic information (class, gender, and marital and parental status) and 100 mm. visual analog scales to measure the venue’s contribution to the student clinical education, ranging from “No contribution” (zero value) to “Largely contributed” (100 value). Third year students provided scores for the CBC and the UTC, and 4th year students provided scores for the MCs and retrospectively for their 3rd year CBC and UTC. The surveys were collected immediately after completion.

Concomitantly, a survey regarding the contribution to their post-doctoral education was mailed to alumni of the pediatric dentistry post- doctoral program asking to score treatment to children under general anesthesia, oral sedations, “regular” clinic (no sedation), seminars, journal club, case conferences, and studding for the American Board of Pediatric Dentistry examination.

The data was included in a statistical program database (JMP 9.0.0®, Statistical Discovery™, from SAS® Institute Inc., Cary, NC, USA). The mean and standard error for each venue score were calculated and the significance of the differences between the pre- or the post-doctoral venues were analyzed using analysis of variance (ANOVA). A .05 level of significance was utilized.

RESULTS

Thirty-one 3rd year students provided scores for the CBC rotation and seventeen 3rd year students for the UTC rotation (68.2 ± 4.5 and 44.9±6.1 respectively), ANOVA of the difference between these scores was statistically significant (ANOVA, $p = .007$, Table 1). ANOVA of the 4th year students’ MCs score (61.4± 4.0) and their retrospective 3rd year CBC and UTC scores (56.4±4.4 and 42.2±4.9 respectively) was statistically significant (ANOVA, $p = .01$, Table 1). On the other hand, ANOVA of the difference between the 4th year MCs score and the retrospective CBC or UTC scores separately, indicated a statistically significant difference only between the MCs score and the UTC score ($p = .004$).

The post-doctoral students scores indicated that the regular clinic received the highest contribution score followed in a descending order by the OR, oral sedation, seminars, case conferences studying for the ABPD examination, and the journal club; the differences between all this values being statistically significant (ANOVA, $p = .0001$, Table 2). ANOVA of the difference between the score for all clinical venues (OR, sedation, and regular clinic) and didactic venues scores grouped together (seminars, journal club, case conferences and studying for the board exam) was statistically significant ($p = .0001$). Additional ANOVA of the differences between the values of the post-doctoral didactic or clinical venues separately indicated statistically significant differences between the didactic venues ($p = .0002$) or between the clinical venues ($p = .005$). The difference between the score for all the clinical venues grouped together (79.5±1.9) and all the didactic venues grouped together (61.2±1.8) was statistically significant ($p = .0001$).

DISCUSSION

While previous studies indicate faculty perspectives on pediatric dentistry clinical education venues,^{3,4} the present manuscript reports students’ perspectives in accordance with the concept that it is the responsibility of dental educators to be aware of the effects of their educational influence on their students. The low number of pre-doctoral surveys included in the study is the outcome from the facts that: a) only 2 classes of about 53 students each could be included in the study since only 3rd and 4th year UKCD students are involved in clinical pediatric dentistry education; b) the surveys were distributed after a lecture to which not all the students assisted; c) the survey was voluntary and anonymous. One could argue that the low number of surveys and the variability of the values challenge reaching any conclusions; however, statistically significant suggest meaningfulness of the findings.

Dental students view their clinical education as a positive experience with four notable exceptions: 1) limited numbers and accessibility of faculty, 2) inconsistent and all too often inconsiderate feedback by faculty, 3) clinic inefficiency and lack of support resources, which required students to perform administrative tasks that detracted from opportunities to learn, and 4) strategies required to meet procedural requirements that were described by some students as being ethically questionable.⁵ This information is most relevant but it does not include the students’ perspectives about the various pediatric dentistry clinical education venues, which are reported in the present study.

The present students’ information is consistent with the teachers’ notion that community-based programs are positive educational

experiences and may be as effective or better than dental school clinics, as they provide patient care opportunity for a more diverse patient population, as it has been reported by the 4th year dental students of the Harvard School of Dental Medicine (HSDM), who completed at a community health center more than double the number of procedures they did in the HSDM teaching practice clinic.⁶ Furthermore, previous and the present findings reflect the facts that community-based clinical programs offer significant advantages such as practice in smaller scale settings, with personalized supervision and use of auxiliaries, increased self-assessment scores, enhanced clinical decision-making skills and exposure to diverse cultural settings; all these most likely leading to an increase in post-rotation student productivity.^{7,8}

Interesting is the finding that the 4th year students one year retrospective scores for the UTC and the CBC were lower than those for the 3rd year students for the same clinics immediately after the UTC and CBC rotations took place and before the MCs rotation took place. These differences may be related to at least to 4 reasons: 1) different group of students; 2) an increase with time in the number of patients at the CBC, resulting in the present 3rd year students being exposed to more patients than the 4th year students were exposed in their 3rd year; 3) the 4th year students perspectives being influenced by a broader evaluation spectrum after experiencing the 3 venues; 4) a larger number of patients seen in the MCs and/or a broader treatment variability. It is also interesting that when the 4th year MCs score was compared to the their retrospective 4th year scores for the CBC and UTC separately, only the difference between the MCs and UTC score was significant, further emphasizing the pediatric dentistry clinical educational value of mobile or static community based clinics.

Clinical dental education may be significantly undermined by the lack of availability of patients and the opportunity to perform

only a narrow variety of treatments; therefore, a potential short-coming of teaching pre-doctoral dental students at university clinics is that about 88% of children are from low-income families or families without insurance, who may have a higher percentage of “no shows” than other children from families with a better economic situation.^{2, 9-11} This not being the case at the MCs in which “no shows” are immediately resolved by bringing an unscheduled child to the MC.

Previous and the present findings suggest that community-based dental education may help to solve three major issues that dental education must address: 1) lack of adequate funding for dental programs, which are costly for universities to operate; 2) lack of vision to provide care for those with limited access and financial means; 3) a dental curriculum that is not flexible or student-friendly.⁶

Limitations

The present study includes a relatively low number of students, did not include a survey on the rationale behind the students’ scores, or if there were differences in the types of treatment performed at the various venues.

CONCLUSIONS

The students populations included in this manuscript suggested that pre-doctoral community-based clinical education and post-doctoral regular university based clinic had the main contribution to their pediatric dental education.

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Table 1. Number of respondents (N), mean and standard error (SE) of the level of impact (from 1 to 100) of clinical venues on pre-doctoral dental education by class.

	3 rd class				4 th Class			
	N	Mean	SE	P*	N	Mean	SE	P*
Twilight clinic	17	44.9	6.1	.007	20	42.2	4.9	.01
Community clinic	31	68.2	4.5		20	56.4	4.4	
Mobile clinic		Not applicable			20	61.4	4.0	

*Analysis of variance

Table 2. Number of respondents (N), mean and standard error (SE) of the level of impact (from 1 to 100) of 3 clinical and didactic venues on pre-doctoral dental education by class.

Type of Venue	Venue	N	Mean	SE	p
Clinical	OR	52	80.6	2.5	.0001
	Oral sedation	52	73.5	2.8	
	Regular clinic	52	84.3	1.7	
Didactic	Seminars	51	71.6	2.8	
	Journal club	37	45.7	5.7	
	Studying for the Board exam	44	59.9	4.4	
	Case Conferences	50	63.3	3.3	

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