

Fourth Year Dental Students' Confidence Level in Treating Pediatric Dental Patients

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Abstract

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Purpose: To determine characteristics of the University of Washington, School of Dentistry, Pediatric Clinical Rotation and dental students' demographic factors associated with fourth year dental students' high levels of knowledge, experience, and confidence in treating pediatric patients.

Methods: For this cross-sectional study, a questionnaire was administered to fourth year dental students. Demographics, previous dental experiences, future practice plans, and pediatric rotation experiences as well as information on students' self-rated levels of knowledge, experience, and confidence on seventeen treatment and diagnosing categories were collected. Data on dental encounters accomplished by the students' was also collected and consisted of the patient's age and the type of treatment provided. ANOVA and 2 Sample t-tests were used to evaluate association between the students' demographic factors and their self-reported knowledge, experience, and confidence levels.

Results: Sixty-nine percent of students participated in this study and one hundred percent reported willingness to treat children. The majority of the procedures that students were exposed during their clinical rotation were preventive. There were no statistically significant associations

with any of the characteristics of the University of Washington, School of Dentistry, Pediatric Clinical Rotation or any of the students' demographic factors.

Conclusions: This study provided information on the age of patients, number and type of procedures the students treated. Students had high numbers of preventative procedures; therefore, they would be more willing and likely to conduct these procedures on young pediatric patients in their future practice which, as a result, would increase the number of general dentists treating pediatric patients.

INTRODUCTION

Access to Oral Health Care

Proper access to preventive dental services and treatment has been associated with a lower prevalence of dental caries and a reduced number of dental carious lesions.¹ Access to oral health care is a area of concern in the United States (US) and this is highlighted in the US Department of Health and Human Services Document Healthy People 2020. It lists five out of seventeen oral health objectives that are directly related to increasing access to preventive dental services.²

Although, efforts to increase access to dental care in the US have been implemented, there are still a number of populations within certain demographics whose unmet oral health care needs remain unchanged.³ Currently, it has been suggested that the availability of dental care, such as dental health professional shortage areas should be considered when speaking of access to dental care.⁴

Dental Caries and Access to Oral Health Care for Children

Newacheck et al. identified that dental care is the most prevalent unmet health need for children in the US.⁵ Among five to seventeen year-olds, dental caries is more than five times as common as a reported history of asthma and seven times as common as hay fever.⁶ Despite the efforts that have been made in the US to decrease dental caries, the Centers for Disease Control and Prevention reported that over the past decade, dental caries in children ages two to five have increased.⁷ Children are considered a vulnerable and underserved population group who commonly lack access to oral health care, in particular, very young children.⁸ The American Dental Association (ADA) as well as the American Academy of Pediatric Dentistry (AAPD) recommends that the first dental visit for all children occurs around the eruption of their first tooth but no later than twelve months of age.^{9,10} However, this is difficult to implement as

access to care is an issue for the very age at which the AAPD and ADA are recommending for first dental visits. One solution that has been presented to address some of the issues dealing with access to dental care for children is to encourage general dentists to see more children.¹¹ As of September 2014, general dentists comprise of 80% of the dental work force, where as pediatric dentist comprise of 3%.¹² Therefore, it would be ideal if general dentist are confident in their ability to provide preventive and basic dental treatment needs to young children.

Dental Care by General Dentists for Children

Seale and Casamassimo performed a study that surveyed general dentists about the age of children that they see in their practice. They found that 9% of respondents did not treat children between the ages of zero and fourteen years, 73% refused to treat children age six to eighteen months, 28% did not treat children between eighteen months and three years, and 2% did not treat children between four and six years. It was also reported that many general practitioners did not know about and or did not agree with the ADA/AAPD's guidelines for a child's first dental visit.¹³ These data suggest, there is a need to identify ways to increase the number of general dentists who are willing to see very young children.

Dental Schools' Pediatric Dental Training

Studies have shown that general dentist base their practice of treating children on what they were taught doing their dental school training.^{14,15} In 2006, Rich, Straffon, and Inglehart studied general dentists and found that 40.4% of the respondents reported that their dental school education had prepared them well to treat children and only 33.4% indicated that their clinical experiences in dental school prepared them well to treat children. Even more note worthy was the fact that 85% of respondents did not feel well prepared to treat pediatric patients under three years of age.¹⁶ Seal and Casamassimo also surveyed US dental schools and asked about the

pediatric dentistry curriculum. They reported that on average, the pediatric dental curriculum taught students to treat children four years old and older.¹⁷ Hands-on educational experiences with infant oral health with children less than three years old were significantly associated with positive attitudes of general dentists about providing dental care for Medicaid-eligible preschool age children.¹⁸ However, only half of the dental schools in the US are providing actual examination experiences with infants.¹⁹ If we want general dentist to treat young children then they must have the experience to do so and that begins while they are in dental school.

Study Objectives

The primary objective of this study was to determine which characteristics of the University of Washington's, School of Dentistry (UW SOD) pediatric dentistry rotation are associated with fourth year dental students' high levels of knowledge, experience, and confidence in treating pediatric patients. We also want to determine which dental students' demographic and clinical training factors are associated with high levels of knowledge, experience, and confidence in treating pediatric patients. We hypothesized that an increase in overall clinical experiences and/or procedures of fourth year dental students during their pediatric rotation would be associated with high levels of knowledge, experience, and confidence in treating pediatric dental patients.

As the UW SOD is shifting its current curriculum to a clerkship model, where students spends six consecutive weeks at the University of Washington Center for Pediatric Dentistry (UW CPD), this study will provide important baseline information to be used by the Department of Pediatric Dentistry for future research. Specifically, this study will offer data on how current clinical training is meeting the Commission on Dental Accreditation (CODA) requirements, how different educational models provide training, and whether this training can increase knowledge,

experience and confidence of future general dentists and therefore increase the number of general dentists providing care to pediatric populations which increases access to care.

METHODS

This study was approved by the UW's Human Subject Division of the Institutional Review Board (number 47116).

Sixty-seven fourth year students from the UW SOD were asked to participate in this cross-sectional study. Inclusion criteria for participation included being a student in the graduating class of 2014 and having completed their pediatric dental clinical rotation at the UW CPD.

Students under the age of twenty-one were planned to be excluded; however, none of the participating students qualified. In addition to the didactic education, the pediatric rotation consisted of three nonconsecutive, one-week rotations to the UW CPD, during the third and fourth years of the students' dental school training. This rotation entailed direct clinical contact with patients (less than one year to nineteen years of age) under the supervision of pediatric dental faculty and senior pediatric residents. Strong emphasis was placed that the students' participation in this study was voluntary, and that the grade that was received for their rotation would not be affected. It was also stated that the students could withdraw from the study at any time.

Data Collection

The principal investigator met with the class as a whole to administer a questionnaire that asked about the students' demographics, previous dental experiences, future practice plans, and included three optional questions about their pediatric dental rotation experiences. Variables collected from the questionnaire were; name, gender, age range, marital status, whether they had any children, if they had previous dental experience prior to starting dental school (dental assistant, hygienist, or

international dentist), whether they practiced dentistry on a mission trip, whether they were a participant of the Regional Initiatives in Dental Education (RIDE) program, what year and quarter were the weeks of the rotation completed, were they going into a residency after graduation and if so what type of residency, where will they practice, do they plan on treating pediatric patients, what is the minimum age they would be willing to treat, and what type of procedures did they feel comfortable providing to pediatric patients. The three optional questions asked the students to: 1- rate how beneficial the quality of mentoring/teaching you received during the pediatric dental rotation, 2- rate the level of effort you feel you put into learning in the clinic, and 3- to write any suggestions to help improve mentorship/teaching.

As part of the curriculum of their pediatric dental rotation, the students completed a survey at the end of their three-week clinical rotation. This was developed and administered by the overseeing faculty member of the rotation to show how the students rated themselves on a scale of 1 to 5 (1- lowest and 5 highest) on their levels of knowledge, experience, and confidence on the following seventeen treatment and diagnosing categories: performing a knee-to-knee examination, performing an examination on a child in primary dentition, performing an examination on a child in mixed dentition, performing an examination on a child in permanent dentition, taking radiographs of a child in primary or mixed dentition, interpreting radiographs of a child in primary or mixed dentition, performing a caries risk assessment on a child, identifying Early Childhood Caries (ECC) and Severe ECC (S-ECC), evaluating a child's occlusion, growth, and development, summarizing the criteria for sealant placement, formulation and discussing a sequenced treatment plan, giving OHI and anticipatory guidance to a patient and parent, completing a prophylaxis on a child, managing the behavior of a child throughout a restorative

procedure, administering local anesthesia to a child, administering nitrous oxide to a child, and completing a restorative procedure on a child.

Data was also collected on the patients that the dental students provided treatment to during their three-week rotation over the course of the students' third and fourth years of dental school.

Personnel from the UW SOD's billing office were asked to extract variables from Axium, the school's electronic dental chart system. The information collected included: the dental students' name and provider number, the date treatment was provided, the date of birth of the patient, a description of the treatment provided, and the American Dental Association billing code for the treatment. The date treatment and the date of birth of the patient was used calculate the age of the patient at the time of treatment.

All of the data was compiled individually by each student's name and was then given a random identifying number. Study data was collected and managed using REDCap electronic data capture tools hosted at the UW.²⁰ REDCap (Research Electronic Data Capture), is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources.

Data Analysis

The mean, standard deviation, count, and percentage was calculated for all variables. ANOVA and 2 Sample t-tests were used to test if demographic factors of the dental students were associated with increasing knowledge, experience, and confidence levels in treating pediatric patients. All statistical analyses were performed with Stata 12.0, College Station, TX, USA, 2013. The significance level was set at 0.05.

RESULTS

Descriptive Statistics of Dental Students' Demographics, Dental Experiences and Future Plans

Forty-six (69%) of dental students from the UW SOD 2014 graduating class participated in this study. The majority of the participating students was between the ages of twenty-five to thirty (85%), was male (65%) and did not have children in the household (74%). Thirty-nine percent of the dental students had previous experiences in dentistry before starting dental school.

Seventeen percent of the students reported that they would practice in a rural area and one hundred percent were willing to treat pediatric dental patients. The majority (87%) were willing to treat patients age five and under (Table 1).

Forty-five students completed the multiple-choice section from the three optional questions on the questionnaire, while only eighteen completed the write in section. The majority of the students (twenty-two) rated the quality of mentoring/teaching that they received as; 2, moderately beneficial and twenty-seven students rated the level of effort that they put into learning while in the pediatric dental clinic as; 2, a moderate amount of effort. The majority (twelve) of the suggestions that were given to help improve mentorship/teaching centered around having more clinical exposure to restorative procedures.

Summary of Procedures Performed by Dental Students

On average, each dental student completed 139 procedures; treated 40 pediatric patients with an average age of 9; saw 3 patients who were three years old or younger; and completed 11 procedures on patients who were three years old or younger during their three-week pediatric dental clinical rotation at the UW CPD. On average the number of procedures completed by each dental student consisted of: 31 exams, 32 cleanings, 25 radiographs, 2 used nitrous oxide, 14

sealants, 7 restoratives, 1 stainless steel crown, 1 pulp therapy, and 1 extraction (Table 2).

Minimum Age of Patients Dental Students Were Willing to Treat in the Future

Comparisons

There was not a statistically significant association between the dental students' reported minimum age of patients they were willing to treat in their future practice and their demographic characteristics (Table 3).

There was also not a statistically significant association between the dental students' reported minimum age of patients they were willing to treat in their future practice and their number of procedures or procedure types performed (Table 3).

Associations with Average Levels of Knowledge, Experience, and Confidence for All Students

There was not a statistically significant association between any of the seventeen self-rated treatment and diagnosing categories for knowledge and; gender, dental student age, having had children in household, having had previous dental experience, or having had a high number (161) of patients (Table 4).

There was not a statistically significant association between the seventeen self-rated treatment and diagnosing categories for experience and; gender, dental student age, having had children in household, having had previous dental experience, or having had a high number of patients (Table 5).

There was not a statistically significant association between any of the seventeen self-rated treatment and diagnosing categories for confidence and; gender, dental student age, having had children in household, having had previous dental experience, or having had a high number of patients (Table 6).

DISCUSSION

The main goal of the study was to determine which characteristics of the UW SOD pediatric dentistry rotation were associated with dental students' high levels of knowledge, experience, and confidence in treating pediatric patients. The secondary aim was to determine which dental students' demographics and clinical training factors were associated with high levels of knowledge, experience, and confidence in treating pediatric patients.

There were no statistically significant findings when the dental students' demographics and high number of procedures was compared to the seventeen self-rated procedures. This disagrees with the hypothesis that an increase in overall clinical experiences and or procedures of fourth year dental students would have been associated with higher levels of knowledge, experience and confidence in treating pediatric dental patients.

The students completed the self-rated surveys at different times during their dental school training. These surveys could have been completed during the beginning or end of their fourth year of dental school. If they were completed in the beginning, a student would have had less clinical experience overall verses the students who completed the survey towards end of their fourth year. This would account for varying levels of experience, knowledge, and confidence. The students' suggested that more clinical exposure to restorative procedures would help improve mentorship/teaching. Only a few students had exposure to more difficult procedures such as stainless steel crowns, pulp therapy or extractions. The majority of the procedures that the students were exposed to were preventative procedures such as exams, cleaning, radiographs, and fluoride placement.

Another factor that could have decreased the amount of difficult procedures that the dental students were exposed to was where the students received their clinical training. The location

where the dental students treated pediatric patients was shared with the pediatric postgraduate and general practice residents. The difficult restorative procedures would have likely been scheduled for the residents.

This study did provide descriptive baseline information on the type of procedures and the age of patients that dental students were exposed to. Each dental student treated at least one patient who was three years old or younger during his or her clinical rotation and the average overall age of the patients that the student's evaluated was 9 years. In comparison to Dr. De Bord's study in 2010 that gave descriptive data on the patients treated by dental students and pediatric dental residents at the UW SOD; the overall average age of patients treated by dental students was 11 years.²¹ The students' exposure to a younger patient population may lead to a greater willingness to treat younger patients in practice.

Study Limitations

Only sixty-nine percent of the class responded to this study; however, all of the students that attended class participated in the study. When the students were asked to participate in this study, graduation was only a couple of weeks away, so the students that were not present were either on vacation or handling matters related to graduation. If this study was repeated, the students could complete the survey and questionnaire immediately following the completion of their clinical rotation at the UW CPD.

CONCLUSION

This study did not show significant associations with the variables tested; however it did provide important baseline information on the age of the patients, the number and type of procedures the dental students are exposed to during their rotation. Although the students did not have a high exposure to restorative procedures, they did have high numbers with preventative procedures.

With this, the students should have had high levels of experience, knowledge, and comfort with preventative procedures; therefore, they would be more likely to conduct these procedures on young pediatric patients in their future practice.

The average age of patients treated by dental students has decreased since 2010 and each student treated at least one patient under the age of three. This decrease was by two years and this is promising because it decreased in a five-year time frame. This information is beneficial because it will raise the question to the UW SOD pediatric department as to what their efforts and future goals for the curriculum will be for the dental students.

REFERENCES

1. Edelstein, B. L. Disparities in Oral Health and Access to Care: Findings of National Surveys. *Ambulatory Pediatrics* 2002;2(2) 141-147.
2. Office of Disease Prevention and Health Promotion. Healthy People 2020 Topics & Objectives. 2014. At www.healthypeople.gov/2020/topics-objectives/topic/oral-health/objectives.htm. Accessed: October 11, 2014.
3. Guay, A.H. Access to dental care. Solving the problem for underserved populations. *JADA* 2004;135:1599-1605.
4. Goodman HS, Weyant RJ, DeFriese GH, Barker BD. Dental health personnel planning: a review of the literature. *J Public Health Dent* 1990;50(1):48-63.
5. Newacheck PW, Hughes DC, Hung YY, et al. The unmet health needs of America's children. *Pediatrics* 2000;105(4):989-997.
6. Oral Health in America. A report of the Surgeon General 2000;63-64.
7. Dye BA, Tan S, Smith V, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004, *Vital Health Stat.* 2007 Apr;11(248):1-92.
8. Committee on Oral Health Access to Services Board on Children, Youth, and Families Board on Health Care Services. Improving Access to Oral Health Care for Vulnerable and Underserved Populations. Washington, D.C.: The National Academies Press, 2011.
9. American Dental Association. ADA statement on early childhood caries. At: www.ada.org/en/about-the-ada/ada-positions-policies-and-statements/statement-on-early-childhood-caries.htm Accessed: October 11, 2014.
10. American Academy of Pediatric Dentistry. 2014-2015 Oral health policies—Dental home. At: www.aapd.org/media/Policies_Guidelines/P_DentalHome.pdf.htm Accessed: October 19, 2014.
11. Mouradian, W.E, Wehr, E, Crall, J.J. Disparities in Children's Oral Health and Access to Dental Care. *JAMA* 2000;284(20): 2625-2631.
12. The Henry J. Kaiser Family Foundation. State Health Facts: Professionally Active Dentists by Specialty Field in the US. 2014. At: <http://kff.org/other/state-indicator/dentists-by-specialty-field.htm> Accessed: October 19, 2014.
13. Seale, N.S, Casamassimo, P.S. Access to dental care for children in the United States, A Survey of General Practitioners. *JADA* 2003;134:1630-1640.
14. Smith CS, Ester CV, Inglehart MR. Dental education and care for underserved patients: an analysis of students' intentions and alumni behavior. *J Dent Educ* 2006;70(4):398-408.

15. Dao LP, Zwetchkenbaum S, Inglehart MR. General dentists and special needs patients: does dental education matter? *J Dent Educ* 2005;69(10):1107-15
16. Rich, J.P, Straffon, L, Inglehart, MR, Habil, P. General Dentists and Pediatric Dental Patients: The Role of Dental Education. *J of Dent Educ* 2006;70(12):1308-1315.
17. Seale, N.S, Casamassimo, P.S, U.S. predoctoral education in pediatric dentistry: its impact on access to dental care. *Journal of Dental Education* 2003;67(1), 23–30.
18. Cotton KT, Seale NS, Kanellis MJ, Damiano PC, Bidaut- Russell M, McWhorter AG. Are general dentists' practice patterns and attitudes about treating Medicaid-enrolled pre- school age children related to dental school training? *Pediatric Dent* 2001;23:51-55.
19. McWhorter, A.G, Seale, N.S, King, S,A. Infant oral health education in U.S. dental school curricula. *Pediatric Dent* 2001;23:(5) 407-409.
20. Paul A. Harris, Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, Jose G. Conde, Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support, *J Biomed Inform.* 2009;42(2):377-81.
21. De Bord, J. Berg, J., Leggott, P., Lin, J.Y., Seminario, A. L. Descriptive study of the University of Washington pediatric dental clinic. A Thesis 2010.

Table 1: Descriptive statistics of Dental student's Demographics, dental experience, and future plans

N = 46			
	N (%)		N (%)
Age		Future practice location	
25-30 years	39 (84.7%)	Urban	16 (34.7%)
More than 30 years	7 (15.2%)	Suburban	21 (45.6%)
Gender		Rural	8 (17.3%)
Male	30 (65.2%)	Not going into practice immediately	1 (2.1%)
Female	16 (34.7%)	Willingness to Treat Pediatric Patients in the Future	
Children in Household		Yes	46 (100%)
Yes	11 (23.9%)	No	0
No	34 (73.9%)	Minimum age of pediatric patients willing to treat	
Previous Dentistry Experience		< 2 years	34 (73.9%)
Yes	18 (39.1%)	3-5 years	6 (13.0%)
No	28 (60.8%)	6-9 years	5 (10.8%)
		10 + years	1 (2.1%)

Table 2: Summary of procedures performed by dental students:

	Mean (sd^a)	[min, max]
Number of Procedures Performed by Dental Student	138.7 (28.0)	[73, 201]
Number of Patients Seen by Dental Student	39.6 (7.11)	[21,57]
Age of Patients Seen by Dental Students (years)	9.3 (4.7)	[<1, 19]
Number of Procedures on patients 3 years or younger	10.7 (5.5)	[<1,24]
Number of patients 3 years or younger	3.4 (1.7)	[<1,8]
Number of Procedure Types Performed by Dental Students		
Exams	31.1 (6.1)	[18,48]
Cleaning	32.0 (6.7)	[18,50]
Fluoride	25.7 (7.2)	[10,38]
X-rays	25.3 (6.9)	[9,41]
Nitrous Oxide	2.1 (1.1)	[1,4]
Sealants	14.0 (7.0)	[2,32]
Restorative	6.8 (3.8)	[1,17]
Stainless Steel Crowns	1.0 (0.0)	[1,1]
Pulp Therapy	1.0 (0.0)	[1,1]
Extractions	1.3 (0.7)	[1,3]

^asd denotes standard deviation

Table 3: Associations between minimum age of patients students are willing to see in their future practice and student's demographic and treatment characteristics.

Students' Characteristics	Ages 0 – 2 (N=34) N (%)	Ages 3 - 5 (N=6) N (%)	Ages 6 and up, (N=6) N (%)	P-value *
Age				0.411
25-30 years	30 (88.2%)	5 (83.3%)	4 (66.6%)	
More than 30 years	4 (11.7%)	1 (16.6%)	2 (33.3%)	
Gender				0.702
Male	21 (61.7%)	4 (66.6%)	5 (83.3%)	
Female	13 (38.2%)	2 (33.3%)	1 (16.6%)	
Children in Household				0.863
No	25 (75.7%)	5 (83.3%)	4 (66.6%)	
Yes	8 (24.2%)	1 (16.6%)	2 (33.3%)	
Previous Dentistry Experience				
No	21 (61.7%)	3 (50.0%)	4 (66.6%)	0.889
Yes	13 (38.2%)	3 (50.0%)	2 (33.3%)	
High number of procedures				
No	26 (76.4%)	4 (66.6%)	4 (66.6%)	0.636
Yes	8 (23.5%)	2 (33.3%)	2 (33.3%)	
	Mean (sd ^a)	Mean (sd ^a)	Mean (sd ^a)	P-value**
Number of Procedures	137.3 (29.41)	141.6 (23.17)	143.5 (27.23)	0.855
Number of Procedures on patients ≤ 3	10.7 (5.87)	9.0 (6.57)	9.1 (2.71)	0.689
Procedure Types				
Exam	29.8 (6.72)	29.6 (2.73)	30.8 (6.11)	0.936
Cleaning	30.9 (7.54)	30.1 (4.02)	30.6 (5.42)	0.965
Fluoride	23.8 (7.89)	26.5 (5.75)	28.1 (5.67)	0.360
X-rays	23.2 (7.11)	27.6 (8.50)	26.3 (5.12)	0.287
Nitrous Oxide	2.1 (1.16)	1.6 (1.15)	1.6 (0.89)	0.518
Sealants	13.2 (6.76)	14.8 (7.62)	12.1 (7.93)	0.802
Restorative	6.35 (4.00)	6 (2.36)	9.5 (4.67)	0.187
SSC	1.0 (0.00)		1.0 (0.00)	
Pulp therapy	1.0 (0.00)		1.0 (0.00)	
Extractions	1.4 (0.89)	1.3 (0.57)	1.0 (0.0)	0.903

* denotes Fisher's Exact Test,
^a sd denotes standard deviation,
** denotes ANOVA Test

Table 4: Associations with Average level of Knowledge for all students (rated 1 – 5 with 1 = Low level of experience and 5 = High level of experience) and Student Demographics

N=46																
	Gender			Student Age (years)			Children in Household			Previous Experience			High Number of Patients < 3 years			Overall
	Male	Female		25 - 30	> 30		Yes	No		Yes	No		Yes	No		
Procedures	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)
1. Performing a knee-to-knee examination	4.0 (0.78)	3.6 (0.70)	0.104	3.8 (0.71)	4.1 (1.06)	0.420	4.0 (0.83)	3.8 (0.76)	0.472	3.9 (0.18)	3.9 (0.76)	0.947	4.0 (0.75)	3.8 (0.79)	0.588	3.9 (0.77)
2. Performing an examination on a child in primary dentition	4.3 (0.53)	4.1 (0.62)	0.347	4.2 (0.57)	4.4 (0.53)	0.341	4.3 (0.50)	4.2 (0.59)	0.398	4.1 (0.67)	4.3 (0.47)	0.260	4.2 (0.56)	4.3 (0.60)	0.892	4.2 (0.56)
3. Performing an examination on a child in mixed dentition	4.3 (0.53)	4.0 (0.68)	0.237	4.2 (0.61)	4.2 (0.48)	0.708	4.3 (0.50)	4.1 (0.62)	0.326	4.1 (0.75)	4.2 (0.46)	0.388	4.1 (0.66)	4.2 (0.53)	0.704	4.2 (0.08)
4. Performing an examination on a child in permanent dentition	4.6 (0.47)	4.5 (0.15)	0.294	4.6 (0.49)	4.5 (0.53)	0.844	4.4 (0.52)	4.6 (0.47)	0.228	4.7 (0.46)	4.5 (0.51)	0.206	4.6 (0.47)	4.5 (0.50)	0.340	4.6 (0.49)
5. Taking radiographs of a child in primary or mixed dentition	4.2 (0.71)	3.8 (0.71)	0.153	4.1 (0.73)	4.1 (0.69)	0.823	4.2 (0.23)	4.0 (0.71)	0.376	4.2 (0.64)	4.0 (0.76)	0.297	4.0 (0.68)	4.0 (0.77)	0.972	4.1 (0.72)
6. Interpreting radiographs of a child in primary or mixed dentition	4.2 (0.67)	4.0 (0.73)	0.299	4.1 (0.67)	4.1 (0.89)	0.976	4.3 (0.67)	4.0 (0.71)	0.261	4.0 (0.72)	4.2 (0.68)	0.464	4.0 (0.75)	4.2 (0.62)	0.163	4.1 (0.69)
7. Performing a caries risk assessment on a child	4.2 (0.84)	4.1 (0.54)	0.952	4.1 (0.75)	4.2 (0.75)	0.740	4.3 (0.67)	4.1 (0.75)	0.447	4.1 (0.70)	4.2 (0.78)	0.832	4.2 (0.69)	4.0 (0.81)	0.373	4.1 (0.74)

8. Identifying Early Childhood Caries (ECC) and Severe ECC (S-ECC)	3.8 (0.91)	3.9 (0.68)	0.664	3.8 (0.84)	4.0 (0.81)	0.659	3.9 (0.83)	3.8 (0.84)	0.927	3.8 (0.78)	3.8 (0.87)	0.812	3.8 (0.85)	3.9 (0.82)	0.693	3.8 (0.83)
9. Evaluating a child's occlusion, growth, and development	3.7 (0.90)	3.9 (0.77)	0.427	3.8 (0.88)	3.7 (0.75)	0.746	3.9 (0.70)	3.7 (0.91)	0.666	3.6 (0.21)	3.8 (0.15)	0.400	3.7 (0.92)	3.8 (0.81)	0.815	3.8 (0.85)
10. Summarizing the criteria for sealant placement	4.2 (0.78)	4.3 (0.62)	0.610	4.2 (0.72)	4.4 (0.78)	0.658	4.4 (0.82)	4.2 (0.71)	0.501	4.3 (0.69)	4.2 (0.75)	0.526	4.4 (0.59)	4.2 (0.83)	0.348	4.3 (0.73)
11. Formulating and discussing a sequenced treatment plan	4.0 (0.88)	4.1 (0.61)	0.685	4.0 (0.74)	4.2 (1.11)	0.571	4.2 (1.0)	4.0 (0.73)	0.422	4.0 (0.76)	4.1 (0.83)	0.657	4.0 (0.78)	4.0 (0.82)	0.874	4.0 (0.80)
12. Giving OHI and anticipatory guidance to a patient and parent	4.5 (0.57)	4.5 (0.51)	0.707	4.5 (0.55)	4.5 (0.53)	0.797	4.5 (0.52)	4.5 (0.56)	0.931	4.5 (0.12)	4.5 (0.57)	0.734	4.5 (0.54)	4.5 (0.58)	0.798	4.5 (0.54)
13. Completing a prophylaxis on a child	4.5 (0.82)	4.5 (0.51)	0.752	4.4 (0.12)	4.7 (0.48)	0.323	4.6 (0.50)	4.5 (0.78)	0.508	4.5 (0.98)	4.5 (0.50)	0.888	4.6 (0.49)	4.4 (0.88)	0.298	4.5 (0.72)
14. Managing the behavior of a child throughout a restorative procedure	3.9 (0.98)	4.1 (0.61)	0.422	3.9 (0.87)	4.4 (0.78)	0.158	4.1 (0.87)	3.9 (0.86)	0.495	3.7 (1.11)	4.1 (0.65)	0.219	4.0 (0.78)	3.9 (0.95)	0.736	4 (0.86)
15. Administering local anesthesia to a child	4.0 (0.94)	4.0 (0.63)	0.777	3.9 (0.84)	4.4 (0.78)	0.198	4.2 (0.78)	4.0 (0.85)	0.340	3.8 (1.04)	4.1 (0.66)	0.223	4.0 (0.78)	4.0 (0.90)	0.988	4.0 (0.84)
16. Administering nitrous oxide to	3.4 (1.16)	3.1 (1.31)	0.436	3.2 (1.21)	4.0 (1.00)	0.092	3.6 (1.12)	3.2 (1.25)	0.329	3.2 (1.22)	3.3 (1.22)	0.832	3.5 (1.20)	3.1 (1.11)	0.244	3.3 (1.21)

a child																
17. Completing a restorative procedure on a child	3.9 (1.04)	4 (0.73)	0.700	3.8 (0.91)	4.2 (1.11)	0.377	4.3 (0.94)	3.8 (0.92)	0.208	3.8 (1.09)	4.0 (0.83)	0.588	4 (0.92)	3.8 (0.96)	0.646	3.9 (1.04)

^a sd denotes standard deviation

* denotes 2 sample T-test

Table 5: Associations with Average level of Experience for all students (rated 1 – 5 with 1 = Low level of experience and 5 = High level of experience) and Student Demographics

N=46																
	Gender			Student Age (years)			Children in Household			Previous Experience			High Number of Patients < 3 years			Overall
	Male	Female		25 - 30	> 30		Yes	No		Yes	No		Yes	No		
Procedures	Mean (sd ^u)	Mean (sd ^u)	P-value*	Mean (sd ^u)	Mean (sd ^u)	P-value*	Mean (sd ^u)	Mean (sd ^u)	P-value*	Mean (sd ^u)	Mean (sd ^u)	P-value*	Mean (sd ^u)	Mean (sd ^u)	P-value*	Mean (sd ^u)
1. Performing a knee-to-knee examination	3.5 (0.93)	3.3 (1.14)	0.571	3.4 (0.96)	3.7 (1.25)	0.627	3.5 (1.21)	3.5 (0.96)	0.911	3.5 (0.98)	3.4 (1.03)	0.765	3.7 (0.76)	3.2 (1.16)	0.138	3.5 (1.00)
2. Performing an examination on a child in primary dentition	4.1 (0.51)	4.1 (0.61)	0.963	4.1 (0.52)	4.1 (0.69)	0.958	4.1 (0.60)	4.1 (0.53)	0.757	4.1 (0.58)	4.1 (0.52)	0.765	4.1 (0.46)	4.1 (0.61)	0.943	4.1 (0.54)
3. Performing an examination on a child in mixed dentition	4.1 (0.62)	4.2 (0.58)	0.531	4.1 (0.61)	4.4 (0.53)	0.213	4.4 (0.52)	4.1 (0.62)	0.068	4.1 (0.67)	4.2 (0.56)	0.595	4.0 (0.61)	4.2 (0.60)	0.381	4.1 (0.60)
4. Performing an examination on a child in permanent dentition	4.6 (0.56)	4.5 (0.51)	0.820	4.6 (0.49)	4.4 (0.29)	0.563	4.4 (0.68)	4.6 (0.48)	0.404	4.7 (0.46)	4.5 (0.57)	0.156	4.6 (0.49)	4.5 (0.58)	0.555	4.5 (0.54)
5. Taking radiographs of a child in primary or mixed dentition	3.9 (0.80)	3.37 (1.08)	0.102	3.7 (0.97)	3.7 (0.75)	0.991	3.9 (0.70)	3.6 (1.01)	0.347	3.7 (0.89)	3.7 (0.97)	0.977	3.8 (0.88)	3.5 (0.97)	0.313	3.7 (0.93)
6. Interpreting radiographs of a child in primary or mixed dentition	4.0 (0.78)	4.0 (0.57)	0.983	4.0 (0.70)	4.0 (0.81)	0.821	4.1 (0.70)	4.1 (0.73)	0.897	4.0 (0.68)	4.1 (0.73)	0.618	4.0 (0.72)	4.0 (0.71)	0.859	4.0 (0.71)
7. Performing a caries risk assessment on a child	4.0 (0.86)	4.1 (0.61)	0.793	4.0 (0.79)	4.2 (0.75)	0.473	4.1 (0.75)	4.1 (0.79)	0.727	4.1 (0.75)	4.0 (0.81)	0.867	3.9 (0.84)	4.2 (0.72)	0.281	4.0 (0.78)

8. Identifying Early Childhood Caries (ECC) and Severe ECC (S-ECC)	3.5 (1.04)	3.3 (1.14)	0.719	3.3 (1.06)	3.8 (1.06)	0.311	3.6 (1.02)	3.4 (1.07)	0.595	3.5 (1.04)	3.4 (1.10)	0.825	3.4 (0.96)	3.4 (1.17)	0.990	3.4 (1.06)
9. Evaluating a child's occlusion, growth, and development	3.5 (0.89)	4.0 (0.85)	0.074	3.7 (0.85)	3.8 (1.21)	0.779	3.9 (1.04)	3.7 (0.87)	0.568	3.6 (0.97)	3.7 (0.87)	0.675	3.7 (0.88)	3.7 (0.94)	0.933	3.7 (0.90)
10. Summarizing the criteria for sealant placement	4.1 (0.77)	4.3 (0.61)	0.256	4.2 (0.73)	4.3 (0.75)	0.801	4.2 (0.78)	4.2 (0.72)	0.806	4.2 (0.75)	4.1 (0.72)	0.660	4.3 (0.64)	4.1 (0.79)	0.370	4.2 (0.72)
11. Formulating and discussing a sequenced treatment plan	3.7 (0.89)	4.0 (0.96)	0.431	3.7 (0.92)	4.1 (0.89)	0.374	4.0 (0.89)	3.7 (0.94)	0.521	3.7 (1.07)	3.9 (0.81)	0.491	3.8 (1.01)	3.8 (0.85)	0.837	3.8 (0.91)
12. Giving OHI and anticipatory guidance to a patient and parent	4.4 (0.68)	4.5 (0.51)	0.594	4.5 (0.60)	4.4 (0.78)	0.795	4.5 (0.68)	4.5 (0.61)	0.847	4.5 (0.61)	4.5 (0.63)	>0.99 9	4.4 (0.59)	4.5 (0.65)	0.639	4.5 (0.62)
13. Completing a prophylaxis on a child	4.5 (0.86)	4.5 (0.51)	0.759	4.5 (0.75)	4.4 (0.78)	0.741	4.4 (0.68)	4.5 (0.78)	0.677	4.5 (0.98)	4.5 (0.57)	0.830	4.6 (0.47)	4.3 (0.92)	0.160	4.5 (0.75)
14. Managing the behavior of a child throughout a restorative procedure	3.7 (1.07)	3.8 (0.88)	0.716	3.6 (1.00)	4.4 (0.78)	0.054	4.0 (1.09)	3.7 (0.98)	0.975	3.6 (1.14)	3.9 (0.89)	0.327	3.8 (0.88)	3.7 (1.11)	0.702	3.8 (1.0)
15. Administering local anesthesia to a child	3.7 (1.20)	3.2 (1.12)	0.217	3.4 (1.23)	3.8 (0.89)	0.367	3.5 (1.21)	3.5 (1.21)	0.975	3.2 (1.26)	3.7 (1.10)	0.156	3.6 (1.08)	3.4 (1.28)	0.452	3.5 (1.18)
16. Administering nitrous oxide to	3.1 (1.22)	2.3 (1.50)	0.094	2.7 (1.34)	3.4 (1.39)	0.281	3.1 (1.44)	2.8 (1.35)	0.596	2.6 (1.53)	3.0 (1.24)	0.445	3.1 (1.41)	2.6 (1.30)	0.297	2.8 (1.35)

a child																
17. Completing a restorative procedure on a child	3.6 (1.12)	3.6 (0.79)	0.851	3.5 (0.99)	4.1 (1.06)	0.219	3.6 (1.36)	3.6 (0.91)	0.928	3.7 (1.07)	3.6 (0.99)	0.717	3.8 (0.88)	3.4 (1.10)	0.175	3.6 (1.01)

^a sd denotes standard deviation,
^{*} denotes 2 sample T-test

Table 6: Associations with Average level of Confidence for all students (rated 1 – 5 with 1 = Low level of Confidence and 5 = High level of Confidence) and Student Demographics

N=46																
	Gender			Student Age (years)			Children in Household			Previous Experience			High Number of Patients < 3 years			Overall
	Male	Female		25 - 30	> 30		Yes	No		Yes	No		Yes	No		
Procedures	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)	Mean (sd ^a)	P-value*	Mean (sd ^a)
1. Performing a knee-to-knee examination	3.7 (0.85)	3.8 (0.75)	0.852	3.7 (0.80)	3.7 (0.95)	0.838	3.8 (0.87)	3.7 (0.80)	0.936	3.9 (0.72)	3.6 (0.86)	0.267	3.9 (0.75)	3.6 (0.86)	0.315	3.7 (0.81)
2. Performing an examination on a child in primary dentition	4.2 (0.61)	4.2 (0.57)	0.785	4.2 (0.59)	4.0 (0.57)	0.311	4.1 (0.60)	4.2 (0.60)	0.801	4.2 (0.64)	4.2 (0.56)	0.966	4.2 (0.55)	4.1 (0.63)	0.548	4.2 (0.59)
3. Performing an examination on a child in mixed dentition	4.0 (0.67)	4.2 (0.57)	0.259	4.1 (0.65)	4.0 (0.57)	0.609	4.1 (0.60)	4.0 (0.66)	0.668	4.0 (0.72)	4.1 (0.59)	0.672	4.1 (0.71)	4.0 (0.58)	0.784	4.1 (0.64)
4. Performing an examination on a child in permanent dentition	4.6 (0.56)	4.5 (0.51)	0.820	4.6 (0.48)	4.2 (0.75)	0.269	4.3 (0.67)	4.6 (0.47)	0.176	4.7 (0.46)	4.5 (0.57)	0.156	4.6 (0.47)	4.5 (0.59)	0.254	4.5 (0.54)
5. Taking radiographs of a child in primary or mixed dentition	4.2 (0.66)	4.0 (0.81)	0.407	4.1 (0.73)	4.1 (0.69)	0.960	4.2 (0.64)	4.0 (0.75)	0.439	4.1 (0.67)	4.1 (0.75)	0.882	4.0 (0.72)	4.2 (0.72)	0.448	4.1 (0.71)
6. Interpreting radiographs of a child in primary or mixed dentition	4.1 (0.71)	4.0 (0.57)	0.847	4.1 (0.67)	3.7 (0.48)	0.064	4.0 (0.53)	4.0 (0.71)	0.989	3.8 (0.58)	4.2 (0.68)	0.092	4.0 (0.69)	4.1 (0.63)	0.401	4.0 (0.66)

7. Performing a caries risk assessment on a child	4.1 (0.83)	4.2 (0.57)	0.693	4.2 (0.70)	4.0 (1.00)	0.576	4.1 (0.87)	4.2 (0.72)	0.935	4.2 (0.54)	4.1 (0.86)	0.834	4.1 (0.77)	4.2 (0.73)	0.613	4.1 (0.74)
8. Identifying Early Childhood Caries (ECC) and Severe ECC (S-ECC)	3.7 (0.89)	3.9 (0.77)	0.504	3.8 (0.86)	3.5 (0.78)	0.384	3.6 (0.92)	3.9 (0.83)	0.392	3.8 (0.70)	3.8 (0.94)	0.961	3.8 (0.85)	3.8 (0.86)	0.952	3.8 (0.85)
9. Evaluating a child's occlusion, growth, and development	3.6 (0.85)	4.0 (0.77)	0.092	3.8 (0.82)	3.5 (0.97)	0.543	3.7 (0.90)	3.8 (0.83)	0.758	3.6 (0.77)	3.8 (0.87)	0.260	3.7 (0.97)	3.8 (0.72)	0.941	3.7 (0.84)
10. Summarizing the criteria for sealant placement	4.3 (0.71)	4.3 (0.71)	0.852	4.3 (0.70)	4.2 (0.75)	0.817	4.4 (0.82)	4.3 (0.68)	0.639	4.5 (0.61)	4.2 (0.75)	0.226	4.4 (0.59)	4.2 (0.79)	0.326	4.0 (0.72)
11. Formulating and discussing a sequenced treatment plan	4.1 (0.61)	4.0 (0.78)	0.557	4.0 (0.74)	4.1 (0.69)	0.692	4.0 (0.77)	4.0 (0.73)	0.827	4.0 (0.68)	4.0 (0.76)	0.743	4.0 (0.78)	4.0 (0.69)	0.986	4.0 (0.72)
12. Giving OHI and anticipatory guidance to a patient and parent	4.5 (0.57)	4.6 (0.47)	0.245	4.6 (0.49)	4.2 (0.75)	0.303	4.4 (0.68)	4.6 (0.49)	0.478	4.6 (0.50)	4.5 (0.57)	0.641	4.5 (0.50)	4.5 (0.58)	0.815	4.5 (0.54)
13. Completing a prophylaxis on a child	4.5 (0.81)	4.6 (0.50)	0.640	4.5 (0.75)	4.5 (0.53)	0.975	4.5 (0.52)	4.5 (0.78)	0.837	4.5 (0.98)	4.5 (0.50)	0.950	4.7 (0.45)	4.4 (0.88)	0.137	4.5 (0.71)
14. Managing the behavior of a child throughout a restorative procedure	3.7 (1.07)	4.0 (0.77)	0.288	3.8 (0.96)	4.1 (1.06)	0.478	4.0 (1.09)	3.8 (0.95)	0.695	3.7 (1.07)	3.9 (0.92)	0.436	3.9 (0.84)	3.7 (1.10)	0.574	3.8 (0.97)
15. Administering	3.9 (1.01)	3.6 (0.95)	0.315	3.8 (1.02)	3.8 (0.89)	0.924	3.7 (0.90)	3.8 (1.03)	0.639	3.5 (1.09)	4.0 (0.88)	0.091	3.9 (0.97)	3.7 (1.0)	0.592	3.8 (0.99)

local anesthesia to a child																
16. Administering nitrous oxide to a child	3.5 (1.25)	2.8 (1.47)	0.124	3.2 (1.39)	3.5 (1.13)	0.466	3.5 (1.12)	3.2 (1.43)	0.427	2.9 (1.39)	3.4 (1.31)	0.215	3.3 (1.46)	3.2 (1.28)	0.788	3.2 (1.35)
17. Completing a restorative procedure on a child	3.8 (1.07)	3.8 (0.80)	0.976	3.8 (0.96)	4.1 (1.06)	0.478	4.0 (1.00)	3.8 (0.98)	0.676	3.7 (1.11)	3.9 (0.89)	0.633	4.0 (0.92)	3.7 (1.03)	0.391	3.8 (0.97)

^a sd denotes standard deviation,

* denotes 2 sample T-test