



Pediatric Dental Radiographic Interpretation of Third and Fourth Year Dental Students

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Introduction

- Pediatric dental radiology is an integral aspect in general dentistry that needs to be well understood.
- Pediatric dental radiology provides its own sets of unique challenges for dental student learning

PURPOSE

- To examine the knowledge and ability of third and fourth year dental students to prescribe and interpret pediatric dental radiographs
- To evaluate knowledge gained by third year dental students completing a learning module

MATERIALS & METHODS

- Inclusion criteria: all third and fourth year UTHSC-Memphis dental students were eligible to participate in the study.
 - 83 fourth year students completed the one time survey
 - 90 third year students completed the pre-survey, learning module, and post survey
- Third and fourth year students were given a 30 question QuestionPro survey. (Figure 1)
- Third year students were given a voice over PowerPoint discussing indications, interpretation, diagnoses, and treatment options for knowledge growth.
- Third year students received weekly “primer” emails for knowledge retention.
- Third year students were given identical 30 question survey one month from the initial survey.

MATERIALS & METHODS

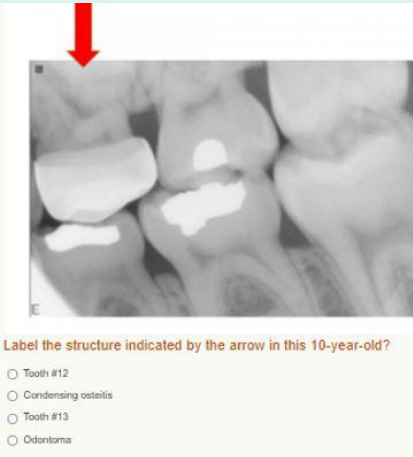


Figure 1. Example of Radiographic survey question

RESULTS

Characteristic	D3 n=90	D4 n=83
Mean Age (p=0.38)	25.7 (range: 22-42)	26.3 (range: 21-38)
Ethnicity		
Asian	9 (10%)	6 (7.2%)
Black/African	3 (3.3%)	1 (1.2%)
Hawaiian/Pacific Islander	0	0
Hispanic/Latino	2 (2.2%)	3 (3.6%)
Native American/Indigenous	0	1 (1.2%)
White/European	71 (78.9%)	64 (77.1%)
Other	5 (5.5%)	6 (7.2%)
Prefer not to answer	0	2 (2.4%)
Gender		
Male	56 (62.2%)	47 (56.6%)
Female	34 (37.8%)	36 (43.4%)
Perceived Class Rank		
Top 1/3	29 (32.2%)	30 (36.1%)
Middle 1/3	43 (47.8%)	30 (36.1%)
Bottom 1/3	12 (13.3%)	19 (22.9%)
Prefer not to answer	6 (6.7%)	4 (4.8%)
Self-reported Mean Rating of Didactic Experience in interpreting pediatric radiographs	3.61 (range: 0-10)	5.36 (range: 0-10)

Question	D3 PRE % (n)	D3 POST % (n)	D4 % (n)
A new patient presents for an exam, at what time should the patient have radiographs taken?	27.8 (25)	41.1 (37)	6 (5)
This 4 year-old patient presents for a new patient exam. What radiographs are indicated? If more than one radiograph applies, select all that apply.	28.9 (26)	26.7 (24)	28.9 (24)
What is the indication to obtain posterior bitewings on a pediatric patient?	45.6 (41)	75.6 (68)	37.3 (31)
This 6-year old patient has optimal fluoride exposure, no family history of caries, and his social history stays the same. The bitewings below were obtained today. When are new bitewings indicated?	72.7 (65)	77.8 (70)	62.7 (52)
What tooth is indicated by the arrow?	72.2 (65)	77.8 (70)	72.3 (60)
What is the most likely diagnosis for teeth E and F?	15.6 (14)	14.4 (13)	18.1 (15)
What is the extent of the lesion on tooth #A?	3.3 (3)	5.6 (5)	4.8 (4)
Is a periapical film indicated for tooth #A?	56.7 (51)	32.2 (29)	41 (34)
Mom states that she has congenitally missing lateral incisors. She is curious to know if her son will be missing his teeth as well. Is a maxillary occlusal radiograph indicated for this child?	57.8 (52)	46.7 (42)	69.9 (58)
What is the terminology for the area indicated by the circle?	32.2 (29)	25.6 (23)	18.1 (15)
Label the structure indicated by the arrow in this 10-year-old?	44.4 (40)	54.4 (49)	57.8 (48)
Label the extent of caries on the distal of the tooth indicated by the arrow.	6.7 (6)	44.4 (40)	27.7 (23)
What is the appropriate course of action?	57.8 (52)	71.1 (64)	72.3 (60)
What dental anomaly, if any, is seen here?	56.7 (51)	52.2 (47)	36.1 (30)
What are the appropriate diagnoses for tooth S? Choose one from each group. - Restorability - Diagnoses	83.3 (75)	86.7 (78)	79.5 (66)
What are the appropriate diagnoses for tooth S? Choose one from each group. - Pulpal Status - Diagnoses	56.7 (51)	64.4 (58)	45.8 (38)
What is this patient's caries risk status?	80 (72)	86.7 (78)	81.9 (68)
#28 answer	82.2 (74)	90 (81)	90.4 (75)
What restorative material would you use on tooth #J for this high caries risk patient?	45.6 (41)	45.6 (41)	51.8 (43)
Diagnose tooth #L.	33.3 (30)	50 (45)	54.2 (45)
What is the term for the radiographic finding?	40 (36)	63.3 (57)	22.9 (19)
Is treatment indicated for tooth #A?	47.8 (43)	66.7 (60)	62.7 (52)
Is treatment indicated for tooth #J?	62.2 (56)	77.8 (70)	62.7 (52)
What treatment would you recommend for the central incisors of this 2 year old?	44.4 (40)	44.4 (40)	47 (39)
list 2 dental anomalies A	75.6 (68)	78.9 (71)	73.5 (61)
list 2 dental anomalies B	30 (27)	53.3 (48)	45.8 (38)

RESULTS

- There was no statistical difference in D3 pre-test scores and D4 test scores.
- There was a difference in D3 post test scores. They were statistically significantly higher than both pre-test scores and D4 scores.
- There was correlation between test scores and perceived class rank.

DISCUSSION

- Dental students are not likely to see very young children with rampant decay.
- Previous literature shows students are under prepared to treat children, but this data shows students may be under prepared to diagnose.
- Dental students missed the most questions in regards to rampant caries in maxillary anterior.
- Didactic training was rated very low for each class; both classes took pediatric dentistry with COVID distance learning methods.

CONCLUSIONS

- Dental students do not feel adequately prepared to accurately prescribe, diagnose, or interpret pediatric radiographs.
- D4 students scored low even with clinical experience because interpreting adult radiographs does not directly correlate to interpreting pediatric films.
- The online learning module aided in knowledge gained and knowledge retention and could be used to supplement predoctoral curricula.