

# Child Abuse and Neglect: Dental and Dental Hygiene Students' Educational Experiences and Knowledge

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*Abstract:* The objective of this study was to explore dental and dental hygiene students' educational experiences and knowledge concerning child abuse/neglect. Questionnaire data were collected from 233 dental (116 male/117 female; response rate=54.82 percent) and seventy-six dental hygiene students (all female; response rate=76.77 percent). Of those surveyed, 94.7 percent of the dental hygiene and 70.5 percent of the dental students reported having learned about child abuse/neglect in classroom settings, and 15.8 percent of the dental hygiene and 29.3 percent of the dental students reported having learned about it in clinical settings. Dental students reported more minutes of instruction about this topic than dental hygiene students (184.48 vs. 112.90 minutes;  $p=.006$ ). Only 5.5 percent of the dental and 16.7 percent of the dental hygiene students defined child abuse correctly; 32.2 percent of the dental and 13.2 percent of the dental hygiene students did not know their legal responsibility concerning reporting child abuse; and 82.4 percent of the dental and 78.9 percent of the dental hygiene students did not know where to report child abuse. Dental care providers are likely to encounter child abuse and neglect in their professional lives and are legally required to respond to these matters. Dental and dental hygiene curricula should be revisited to ensure that students are adequately prepared for this professional task.

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The State of Michigan's Child Protection Law defines child abuse as "harm or threatened harm to a child's health or welfare that occurs through non-accidental physical or mental injury, sexual abuse, sexual exploitation, or maltreatment, by a parent, a legal guardian, or any other person responsible for the child's health or welfare or by a teacher, a teacher's aide, or a member of the clergy."<sup>1</sup> Child neglect is defined as

harm or threatened harm to a child's health or welfare by a parent, legal guardian, or any other person responsible for the child's health or welfare which occurs through either of the following: (i) Negligent treatment, including the failure to provide adequate food, clothing, shelter, or medical care; (ii) Placing a child at an unreasonable

risk to the child's health or welfare by failure of the parent, legal guardian, or any other person responsible for the child's health or welfare to intervene to eliminate that risk when that person is able to do so and has or should have knowledge of the risk.<sup>1</sup>

Each year, the U.S. Department of Health and Human Services compiles data on child maltreatment in the United States.<sup>2</sup> In 2002, 896,000 children were listed as victims of maltreatment, and of those children, 18.6 percent were considered physically abused. Additional estimates showed that 1,400 children died as a result of abuse or neglect that year. Nearly 65 percent of the injuries inflicted in reported child abuse cases occurred in the oral facial region.<sup>3</sup> Considering that statistic, dentists and dental hygienists are in an excellent position to detect signs of child abuse and

report them to avert future trauma to a victim.<sup>3-5</sup> However, despite legislated mandates to report all suspected cases of child abuse and neglect,<sup>6</sup> research conducted in 2003 showed that dentists in the United States rarely reported these incidents.<sup>7</sup> Mouden reported, for example, that only 1 percent of reported cases in the United States are made by dentists.<sup>6</sup>

One potential reason for a lack of reporting may be that dentists and dental hygienists are not well educated about child abuse and neglect. However, in 1985, Carlin and Polk found that U.S. dental schools reported that 86 percent of their students were taught the legal responsibilities of dental care providers as well as some of the indications of child abuse and neglect in the classroom setting. In addition, 91 percent of the schools reported that they informed their students about where to report cases of abuse or neglect.<sup>8</sup> In 1990, Posnick and Donly reported that chairs of predoctoral dentistry programs responded that 100 percent of students were educated about legal issues, and 93 percent said students were instructed about child abuse reporting mechanisms.<sup>9</sup> In the Posnick and Donly study, approximately 45 percent of dental schools reported that they devoted more than one hour of curriculum time to the topic of child abuse/neglect. In 1995, Jessee reported that 56 percent of dental schools devoted at least one hour to the topic of child abuse/neglect.<sup>10</sup>

Research concerning the coverage of child abuse and neglect in dental hygiene curricula also showed an increase in the percentage of programs that covered these topics over time.<sup>11</sup> However, a study conducted in the year 2000 with directors of accredited dental hygiene programs found that only 71 percent of the programs included material on child abuse and neglect in their curricula.<sup>11</sup> Approximately 40 percent of these dental hygiene programs devoted more than one hour to child abuse and neglect in their curricula.

Based on these findings, one may conclude that dentists and dental hygienists graduating from U.S. programs are well prepared to respond to their professional responsibilities concerning this topic. However, in 1998, Jessee and Martin recommended further investigation of the level of preparation that graduating dental and dental hygiene students actually possessed concerning how to successfully confront child abuse/neglect in their professional lives.<sup>12</sup>

The purpose of our study, therefore, was to identify what educational experiences concerning child abuse/neglect dental and dental hygiene students report to have had at a midwestern dental school

(Aim 1) and evaluate the students' knowledge of child abuse/neglect issues and procedures (Aim 2). Specifically, for Aim 1, students were asked a) in which year of their program they learned about child abuse/neglect, b) how they learned about these issues (in classroom, clinical, or community settings), and c) how much time was spent on these topics. For Aim 2, students were asked a) to define child abuse and neglect, b) to answer sixteen questions related to signs of physical and sexual abuse and the diagnosis of child abuse/neglect, and c) to indicate whether they knew their legal responsibilities concerning child abuse/neglect.

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## Methods and Materials

This study was approved by the Institutional Review Board (IRB) for the Health Sciences at the University of Michigan.

Questionnaire data were collected from 233 students in the four dental classes (49.8 percent male/50.2 percent female) and seventy-six students in the three dental hygiene classes (all female) at the University of Michigan. Dental hygiene students at this university join the dental hygiene program after they have completed one year of undergraduate studies and therefore only spend three years in the dental hygiene program in the School of Dentistry. In order to compare the dental and dental hygiene student responses, the answers of the first- and second-year dental students were grouped together and compared with the responses of the incoming dental hygiene students. These dental hygiene students are referred to as "sophomores" because they are in their second year of undergraduate studies, despite the fact that they are actually in their first year in the dental hygiene program.

The response rates of the students in the four classes of the dental school program ranged from 33 percent for the first-year students and sophomores (N=71), to 82 percent for the juniors (N=84), and 72 percent for the seniors (N=78). The response rates for the three dental hygiene classes were 81 percent for the sophomores (N=29), 94 percent for the juniors (N=32), and 51 percent for the seniors (N=15). The surveys were distributed at the end of regularly scheduled classes in April 2005, during the last week of the winter term. Due to this procedure, only students who were not absent due to illness, external rotations, or personal reasons responded to the survey in this classroom setting.

The respondents volunteered to complete the survey anonymously. The students were instructed to answer questions honestly and were informed that participation was voluntary and a refusal to participate would not affect their grades. No identifying information was gathered. The students returned their completed surveys by putting them into an envelope at the back of the classroom. The researchers collected this envelope later. The average time to complete the survey was approximately ten minutes.

The students responded to a self-administered survey that included questions concerning their background (such as gender and year of program), as well as their educational experiences and knowledge about child abuse and neglect. The section on educational experiences asked students to indicate whether they had learned about this topic in classroom settings, clinics, or in external rotations. If they said they had educational experiences in these settings, they were then asked in which classes they had learned about this topic and how much time was spent on it. The section concerning the students' knowledge of child abuse or neglect started with two open-ended questions asking the students to define abuse and neglect. Their open-ended responses to these questions were rated according to how well they matched the definitions in the State of Michigan's Child Protection Law.<sup>1</sup> The students' knowledge concerning diagnosing child abuse/neglect and indicators of physical and sexual abuse was assessed with sixteen questions taken from two prior studies about child abuse/neglect by Kassebaum et al. and Ramos-Gomez et al.<sup>3,13</sup> (See Figure 1.) All but three of the knowledge questions were formulated as statements. The students were asked to indicate if each statement was true or false or say if they did not know the answer. The knowledge questions were categorized into three groups to assess the students' knowledge of a) signs of physical abuse, b) signs of sexual abuse, and c) diagnostic indicators of abuse/neglect. Finally, three questions were included in the survey to assess the students' knowledge of dentists' and dental hygienists' legal responsibilities when they suspect child abuse/neglect. Specifically, the students were asked what exactly their legal responsibility is, where they should report child abuse/neglect, and what are the consequences for not reporting a case of child abuse or neglect.

The data of the dental hygiene students were grouped according to the year in the three-year program. As explained above, since dental hygiene students enter the program as second-year undergradu-

ates, the data for the first- and second-year dental students were combined and compared with the data of the Year 2 dental hygiene students in order to compare the two groups. The data of the third-year dental students were compared with the data of the junior dental hygiene students, and the data of the senior dental and senior dental hygiene classes were compared. Comparisons of frequencies of correct responses were analyzed with chi square tests, and comparisons of means with univariate analyses of variance.

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## Results

### Educational Experiences Concerning Child Abuse/Neglect

Aim 1 was to determine the types of educational experiences of dental and dental hygiene students concerning child abuse/neglect. As can be seen in Table 1, by the end of the final year of the dental and dental hygiene programs, all students reported that they had learned about child abuse/neglect in the classroom setting. While 89.7 percent of the dental hygiene students had already learned about this topic during their first of the three years in the dental hygiene program, only 28.2 percent of the dental students had learned about it during their first and second years in dental school. The most frequently named classes in which the dental students reported that they learned about this topic were "Pediatric Dentistry" (43.78 percent) and "Behavioral Science" (24.89 percent), while the dental hygiene students were most likely to name their "Clinical Specialties" class (67.11 percent) as the source of information. It should be noted that a special one-hour lecture taught by a faculty member of the pediatric dentistry department is included in this "Clinical Specialties" class and that the faculty member includes the topic of child abuse and neglect in this lecture.

At the end of the dental and dental hygiene programs, more than four out of ten students reported to have learned about this topic in clinic settings (41 percent/46.7 percent, respectively). However, when the students were asked whether they had ever suspected any abuse/neglect in a pediatric dental patient, only three students reported that they had.

The number of minutes of instruction on child abuse/neglect that both dental and dental hygiene students reported was highest in the final year of their

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### Questions Concerning Signs of Physical Abuse

- Bruises on the cheek may indicate slapping or grabbing of the face. (True)
- Repeated injury to the dentition resulting in avulsed teeth or discolored teeth may indicate repeated trauma from abuse. (True)
- Bruises noted around the neck are usually associated with accidental trauma. (False)
- Burns are noted in many child abuse cases and they may have the shape of a heated object. (False)
- Bite marks noted on a child's neck or less accessible areas should be investigated, as bite marks are frequently a component of child abuse. (False)
- A strong correlation exists between dental neglect and presence of physical neglect. (True)

### Questions Concerning Signs of Sexual Abuse

- Psychosomatic complaints by the child may indicate a problem relating to sexual abuse. (True)
- Seductive behaviors by a child toward the dental staff may be indicative of prior sexual abuse of a child. (True)
- A child's failure to make eye contact and respond to the dental staff may be a sign of sexual abuse. (True)

### Questions Concerning Diagnostic Indicators of Abuse

- Child abuse and neglect are primarily associated with the stresses of poverty and rarely occur among middle or high income earners. (False)
- Children who have been abused usually tell someone soon after the abuse. (False)
- If a child readily states that an adult has caused harm, the accusation should be addressed. (True)
- Child abuse may be indicated if a parent describes a child's injury as a self-inflicted injury. (True)
- Child abuse may be indicated if a parent reports a child's injury as a sibling inflicted injury. (True)
- Child abuse may be indicated if a parent delays seeking medical attention for a child's injury. (True)

### Additional Question

- In most cases of child abuse and neglect, children are not removed from their parents' homes. (True)

Source: Kassebaum DK, Dove SB, Cottone JA. Recognition and reporting of child abuse: a survey of dentists. *Gen Dent* 1991;39(3):159-62.

**Figure 1. Wording of the knowledge questions concerning child abuse/neglect**

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programs and lowest during their first year (Table 2). Dental students reported on average 51.6 minutes of instruction on child abuse/neglect during their first and second years, while dental hygiene students reported about thirty minutes more of instructional time during their first year in the program (mean=81.8 minutes). Dental hygiene students in the

third and fourth years reported significantly fewer minutes of instruction than the third- and fourth-year dental students (Year 3: 132 vs. 207 minutes; Year 4: 138 vs. 233 minutes). On average, dental students reported having had more minutes of instruction about this topic than dental hygiene students (184.48 vs. 112.90 minutes;  $p=.006$ ).

## Knowledge Concerning Child Abuse/Neglect

The second aim was to assess whether dental and dental hygiene students could demonstrate awareness of knowledge about child abuse/neglect that would prepare them to act appropriately when detecting abuse/neglect in their patients. Students were asked

to answer three questions: a) what is the definition of child abuse/neglect? b) which signs indicate that a child has been abused/neglected? and c) what are the legal responsibilities of dentists and dental hygienists regarding child abuse/neglect?

As can be seen in Table 3, 7.7 percent of the senior dental students and 16.7 percent of the senior dental hygiene students defined abuse correctly, while

**Table 1. Frequencies of responses concerning where dental and dental hygiene students had received information about child abuse and neglect**

Educational Setting	Year of Education	Dental Students	Dental Hygiene Students
		Yes	Yes
Classroom Setting	Dental Years 1 & 2	20	26
	Dhyg Year 2*	(28.2%)	(89.7%)
	Juniors	74	31
		(89.2%)	(96.9%)
	Seniors	78	15
		(100.0%)	(100.0%)
	All Years	172	72
		(74.1%)	(94.7%)
Clinic Setting	Dental Years 1 & 2	2	4
	Dhyg Year 2*	(2.9%)	(13.8%)
	Juniors	34	1
		(40.5%)	(3.1%)
	Seniors	32	7
		(41.0%)	(46.7%)
	All Years	68	12
		(29.3%)	(15.8%)
External Rotation	Dental Years 1 & 2	0	0
	Dhyg Year 2*	(0%)	(0%)
	Juniors	4	4
		(5.0%)	(12.5%)
	Seniors	11	6
		(14.1%)	(40.0%)
	All years	15	10
		(6.9%)	(13.5%)

\*Dental hygiene students spend only three years in the dental hygiene program after one year as undergraduate students in a general undergraduate program.

**Table 2. Average amount of time spent on education about child abuse/neglect in classroom settings in the different years of the dental and dental hygiene curriculum**

Educational Setting	Year of Education	Dental Students	Dental Hygiene Students
		minutes (SD)	minutes (SD)
Classroom Setting	Dental Years 1 & 2	51.57 minutes	81.79 minutes
	Dhyg Year 2*	(SD=44.625)	(SD=51.298)
	Juniors	207.23 minutes	132.14 minutes
		(SD=32.215)	(SD=51.298)
	Seniors	233.06 minutes	138.46 minutes
		(SD=32.917)	(SD=75.285)

\*Dental hygiene students spend only three years in the dental hygiene program after one year as undergraduate students in a general undergraduate program.

78.3 percent of the senior dental students and 76.9 percent of the senior dental hygiene students gave a partially correct response when they were asked to define abuse. Approximately 20 percent of senior dental students and 17 percent of the graduating dental hygiene students were not able to define dental neglect.

As shown in Table 4, the senior dental students answered on average 10.89 out of sixteen child abuse/neglect questions correctly, while the senior dental hygiene students answered on average 11.20 out of sixteen questions correctly. Both dental and dental hygiene students in all three levels of education had the lowest percentage of correct answers for the six questions concerning the signs of physical abuse. Dental students answered only 3.42 out of these six questions correctly, while dental hygiene students answered only 3.45 of the six questions correctly. This finding might be due to the fact that only 3.1 percent of the students responded correctly to the statement “Burns are noted in many child abuse cases and they may have the shape of a heated object” as being false and only 12.9 percent responded correctly to the statement “Bite marks noted on a child’s neck or less accessible areas should be investigated, as bite marks are frequently a component of child abuse” as being false. Overall, the results in Table 4 showed

that the students had gaps in their knowledge about child abuse/neglect.

Three questions were included in the survey to assess the students’ knowledge about their legal responsibilities. The first question asked what the students’ legal responsibilities were concerning child abuse/neglect in the State of Michigan. The correct answer was “to report all suspected cases of child abuse/neglect.” As can be seen in Table 5, the percentage of dental students who knew the correct answer (67.8 percent) was significantly lower than the percentage of dental hygiene students (86.8 percent) who knew their legal responsibility ( $p=.001$ ). While only 45.1 percent of first- and second-year dental students correctly answered this question, 76.2 percent of the third-year and 79.5 percent of the fourth-year dental students knew this answer. Between 80 and 90 percent of the dental hygiene students in the three years of the dental hygiene program knew what they were required to report.

The second question concerning the legal responsibilities asked the students where they would report child abuse/neglect. The correct response was the county agency. Only 17.6 percent of the dental students and 21.1 percent of the dental hygiene students knew where to report child abuse. Even among the graduating seniors, only one out of five dental

**Table 3. Frequencies of dental and dental hygiene students who defined child abuse and neglect correctly, partially correct, or not correctly**

Define “abuse”	Dental Students			Dental Hygiene Students		
	Incorrect	Partially Correct	Correct	Incorrect	Partially Correct	Correct
Dental Years 1 & 2 Dhyg Year 2*	12 (18.2%)	49 (74.2%)	5 (7.6%)	4 (14.3%)	18 (64.3%)	6 (21.4%)
Juniors	12 (14.6%)	67 (81.7%)	3 (3.7%)	4 (12.9%)	22 (71.0%)	5 (16.1%)
Seniors	11 (15.9%)	54 (78.3%)	4 (5.8%)	2 (15.4%)	10 (76.9%)	1 (7.7%)
All Years	35 (16.1%)	170 (78.3%)	12 (5.5%)	10 (13.9%)	50 (69.4%)	12 (16.7%)
Define “neglect”						
Dental Years 1 & 2 Dhyg Year 2*	19 (30.6%)	42 (67%)	1 (1.6%)	3 (11.1%)	23 (85.2%)	1 (3.7%)
Juniors	12 (14.6%)	68 (82.9%)	2 (2.4%)	6 (20%)	24 (80%)	0
Seniors	6 (20%)	60 (90.9%)	0	2 (16.7%)	10 (83.3%)	0
All Years	37 (17.6%)	170 (81.0%)	3 (1.4%)	11 (15.9%)	57 (82.6%)	1 (1.4%)

\*Dental hygiene students spend only three years in the dental hygiene program after one year as undergraduate students in a general undergraduate program.

**Table 4. Average number of correctly answered questions of dental and dental hygiene students**

	Dental Students				Dental Hygiene Students			
	All Questions** (16)	Physical (6)	Sexual (3)	Diagnosis (6)	All Questions** (16)	Physical (6)	Sexual (3)	Diagnosis (6)
Dental Years 1 & 2 Dhyg Year 2*	9.28	2.96	1.79	4.20	10.33	3.55	2.07	4.62
Juniors	11.41	3.71	2.48	4.83	11.20	3.40	2.56	4.87
Seniors	10.89	3.54	2.30	4.76	11.20	3.40	2.40	5.20
All Years	10.6	3.42	2.21	4.62	10.93	3.45	2.34	4.92

\*Dental hygiene students spend only three years in the dental hygiene program after one year as undergraduate students in a general undergraduate program.

\*\*All questions (16) include physical, sexual, and diagnosis questions, plus one additional question (see Figure 1 for the wording of the questions).

**Table 5. Percentages of correct responses of dental and dental hygiene students concerning their legal responsibilities**

	Dental Students			Dental Hygiene Students		
	When do you report?	Where do you report?	Penalty for not reporting	When do you report?	Where do you report?	Penalty for not reporting
Dental Years 1 & 2 Dhyg Year 2*	45.1%	7.0%	9.6%	86.2%	27.6%	48.3%
Juniors	76.2%	23.8%	7.6%	90.6%	25%	34.4%
Seniors	79.5%	20.5%	59.0%	80.0%	0	46.7%
All years	67.8%	17.6%	41.6%	86.8%	21.1%	43.4%

\*Dental hygiene students spend only three years in the dental hygiene program after one year as undergraduate students in a general undergraduate program.

students and no dental hygiene student could answer this question.

The third legal responsibilities question asked students to describe the penalty for not reporting child abuse/neglect. Approximately 59 percent of senior dental students gave a correct answer—that it is a misdemeanor—while dental students in the first three years of the program were largely not informed about this matter. Overall, 43.4 percent of the dental hygiene students knew what the penalty was for not reporting a case, with 46.7 percent of the students answering correctly by their fourth year.

## Discussion and Conclusion

Given the high prevalence of child abuse and neglect in the United States<sup>2</sup> and the high percentage of oral and facial wounds as a result of child maltreatment,<sup>3</sup> it is crucial for dental health care providers to be well educated about child abuse/neglect. Future dentists and dental hygienists should therefore not only recognize suspected cases, but also know how to pro-

ceed if they have a child in their chair who shows signs of being abused or neglected.<sup>14</sup> Based on prior studies,<sup>8,9,11,12</sup> as well as the results of this research, it seems obvious that material about child abuse/neglect is included in dental and dental hygiene curricula. However, based on the results reported here, it is appropriate to ask whether the graduating students have achieved a level of competence that allows them to act professionally when they encounter child abuse/neglect during their professional activities.

The lack of knowledge about child abuse/neglect may be partly due to the fact that most students learned about child abuse and neglect in the classroom setting. The courses most frequently named in our study as the source of the students' knowledge were "Pediatric Dentistry" and "Behavioral Science," echoing the findings reported by Carlin and Polk twenty years ago.<sup>8</sup> It may be time to make explicit efforts to address this material in clinical settings as well as in external rotations and community-based clinics. This suggestion might be especially important when considering external rotations of dental students. As can be seen in Table

1, while 40 percent of the senior dental hygiene students reported that child abuse/neglect was included in their external rotations, only 14.1 percent of the dental students reported having learned about this topic in a community-based setting.

Dental and dental hygiene students' knowledge in the area of child abuse/neglect had deficiencies in several key areas. While at least 80 percent of dental and dental hygiene students could partially define child abuse/neglect, the number of students who could fully define each of these terms was very low. Child abuse and neglect can take on various forms. It is therefore crucial that future providers recognize this problem in its complexity and are well educated to recognize all of its varieties. The lack of correct responses to the knowledge questions concerning the diagnostic indicators, as well as the signs of physical and sexual abuse, could be a result of the students' lack of knowledge concerning what constitutes child abuse and neglect.

Research has shown that practicing dentists recognized a need for more training and additional information to help them deal with child abuse/neglect-related issues.<sup>15,16</sup> In addition, researchers also reported that dental professionals were not always aware of their legal obligations to report child abuse and neglect.<sup>13</sup> The findings of this study showed that the graduating students' legal knowledge could definitely be improved. Only 17.6 percent of dental and 21.1 percent of dental hygiene students knew where to report a case of abuse and neglect. Less than half of the students knew the legal ramifications for not reporting a suspected case. It can be assumed that students/providers who are not well informed about their legal responsibilities concerning child abuse/neglect might be less likely to follow through with appropriate behavior when they encounter a case of child abuse/neglect.

In conclusion, the findings reported here support the results from other studies<sup>8-12</sup> that showed that child abuse and neglect are addressed to some extent in both the dental and dental hygiene curricula. However, the coverage most frequently occurs in a classroom setting and may not be reinforced in clinical settings. In addition, it seems important to assess the outcomes of educational experiences concerning child abuse and neglect carefully. The findings from this study suggest that students were not sufficiently prepared to know what to look for when they suspect child abuse and neglect and what to actually do when they encounter this problem in a professional setting. Curricular modifications should focus on providing students with concrete educational experiences about the process of detecting and reporting child abuse and neglect.

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