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Croatian Dental Students' Educational Experiences and Knowledge in Regard to Child Abuse and Neglect

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Abstract: The purpose of this study was to investigate the educational experiences of a group of Croatian dental students and to assess their knowledge about child abuse and neglect. In the study, 544 respondents (153 male and 391 female) from all six years at the University of Zagreb School of Dental Medicine completed questionnaires, with a response rate of 74.9 percent. A chi-square test was applied to test the differences among students' answers. Values of $p < 0.05$ were considered statistically significant. Out of the total number of respondents, 33.6 percent had encountered the topic of child abuse and neglect during their lectures. The results show a lack of knowledge of the signs pointing to physical and sexual abuse of children. Students from more senior teaching years showed a greater amount of knowledge related to child abuse and neglect in contrast to students from more junior teaching years. In conclusion, dental students should be better educated and prepared for the important role of helping protect children from abuse and neglect.

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Child abuse and neglect are serious public and scientific problems present in all cultural, ethnic, and socioeconomic groups. Consequences of child abuse and neglect are severe and long-lasting and can even lead to death. The World Health Organization estimated that almost 53,000 children died worldwide in 2002 as a result of homicide.¹ It has been estimated that one or two children in England and Wales die weekly as a result of abuse or neglect.²

In Croatia, the extent of abuse is very similar to that in West European and North American countries, but risk factors such as financial problems, unemployment, poverty, social isolation, and stress levels are more prevalent in Croatia.³ According to Buljan Flander's 2007 study of high school juniors and seniors in Croatia,⁴ 15.9 percent have experienced physical abuse, 16.5 percent have experienced emotional abuse, and 13.7 percent have experienced

sexual abuse, while 2.5 percent have been neglected and 4.8 percent have witnessed domestic violence. These numbers represent the children who were recognized as abused or neglected; however, most cases of child abuse and neglect may stay unrecognized, and as a result children keep suffering the pain being inflicted on them.

Injuries to the head, face, and neck are found in 50 to 75 percent of all abuse cases.^{5,6} Greene et al.⁷ compared the oral health status and presence of untreated decayed teeth in abused/neglected children with nonabused/nonneglected controls and found that abused children were eight times more likely to have untreated, decayed permanent teeth than nonabused children. More recently, Montecchi et al.⁸ compared oral health between a group of child witnesses of violence or victims of abuse (abuse group) with children with eating disorders and a control group. Their results indicate that children in the abuse group

showed a higher level of plaque and gingival inflammation and a higher number of decayed teeth than those in the other groups. In addition, Valencia-Rojas et al.⁹ found that abused and neglected children aged between two and five years of age had higher levels of tooth decay than the general population of five-year-olds in Canada.

A dentist is in a unique position to recognize possible child abuse because of the frequency of orofacial injuries and because the signs in the head and neck area are accessible during a dental examination. Also, dentists have a continuing relationship with their pediatric patients and their families. In Croatia, as in most countries, dentists are legally obligated to report any case indicating child abuse and neglect. According to studies in other countries, in spite of their legal obligation, dentists rarely report cases of suspected child abuse, most often because of feeling unprepared due to a lack of knowledge and training regarding child abuse and neglect.¹⁰⁻¹³ Therefore, the education of dental students should include adequate training with regard to the problems of child abuse and neglect. The aim of this study was to assess the present level of a group of Croatian dental students' knowledge related to child abuse and neglect and to compare the results to their year of study.

Materials and Methods

The study was conducted during January, March, and April 2011 at the University of Zagreb School of Dental Medicine. The research was approved by the Ethical Committee of the School of Dental Medicine, University of Zagreb.

A questionnaire was distributed to all six classes of the integrated undergraduate and graduate dental medicine program. Participation in the study was anonymous and voluntary, and all of the respondents signed an informed consent. The questionnaires were handed to the respondents at the end of their lectures and preclinical exercises. The average time needed to complete the questionnaire was ten minutes.

The questionnaire consisted of twenty-nine questions/statements organized into four parts. In the first part, respondents filled in their demographic information: gender, year of birth, and year of study. The second part of the questionnaire addressed the educational experiences of the respondent on the topic of child abuse and neglect. The third part contained questions regarding the students' knowledge of possible signs and symptoms of abuse. The fourth part was comprised of questions dealing with the procedure of reporting abuse and the dentist's legal responsibility when not reporting abuse. Sixteen statements in the third part of the questionnaire were taken from prior studies dealing with the same topic.^{10,14-16}

The data were organized into Microsoft Excel files and were statistically processed using Statistica 9.0. A chi-square test was applied to test the differences in answers among students from different classes. The level of significance was set at $p < 0.05$.

Results

From a total of 726 students in all six classes of the integrated undergraduate and graduate dental medicine program, 544 returned a questionnaire

Table 1. Respondents' distribution by gender and year of study

Gender	Year of Education						Total N (%)
	1st N (%)	2nd N (%)	3rd N (%)	4th N (%)	5th N (%)	6th N (%)	
Male	24 (19.1%)	28 (32.2%)	18 (20.5%)	19 (27.5%)	47 (40.5%)	17 (29.3%)	153 (28.1%)
Female	102 (81.0%)	59 (67.8%)	70 (79.6%)	50 (72.5%)	69 (59.5%)	41 (70.7%)	391 (71.9%)
Total	126 (23.2%)	87 (16.0%)	88 (16.2%)	69 (12.7%)	116 (21.3%)	58 (10.7%)	544 (100%)
Percentage of total students	78.8%	51.5%	91.7%	82.2%	90.6%	65.2%	74.9%

Note: Percentages may not total 100% because of rounding.

for a response rate of 74.9 percent. Respondents' distribution according to gender and year of study is shown in Table 1.

Table 2 lists mandatory and elective courses related to the topic of child abuse and neglect in undergraduate study at the University of Zagreb School of Dental Medicine. The respondents' educational experience on the topic of child abuse and neglect during their studies is shown in Table 3. Around half of the first-year students said they encountered the topic of child abuse and neglect in the elective course Sociology of the Dental Profession, in which the topic of child abuse and neglect is mentioned only superficially and only from the sociological point of view. A smaller number of third-year students reported encountering the topic of dental neglect in their elective course Oral Hygiene, but again only from the oral hygiene aspect. The mandatory course Pediatric and Preventive Dentistry dedicated only a one-hour lecture to dental neglect; that was in the summer semester of the fourth year. In addition the fourth-year students in summer semester could choose an elective course Child Abuse and Neglect,

which is dedicated exclusively to the topic of child abuse and neglect and consists of fifteen hours of lectures. The timing of our questionnaire (at the end of the winter semester) could be the reason for the small percentage of fourth-year students who had knowledge of child abuse and neglect. By contrast, almost half of the fifth-year students and 79.3 percent of the sixth-year students said they had knowledge of the topic.

Students' responses regarding their knowledge of signs of physical abuse are shown in Table 4. Fewer than half of the total number of students responded correctly to the following three out of nine statements: "A strong correlation exists between dental neglect and presence of physical neglect"; "Orofacial trauma is found in 50–75 percent of children with diagnosed physical abuse"; and "Injuries to the ears, sides of the face and neck, and tips of shoulders are more often caused by accidents during child play and everyday life." As shown in Table 5, five of the seven statements concerning emotional and sexual abuse and neglect showed statistically significant differences between respondents in relation to their

Table 2. Mandatory and elective courses connected to the child abuse and neglect topic

Information on Child Abuse and Neglect		
Year of Education	Mandatory Course	Elective Course
1st	None on this topic	Sociology of the Dental Profession (mentioned only from the sociological point of view)
2nd	None on this topic	None on this topic
3rd	None on this topic	Oral Hygiene (mentioned only from the oral hygiene point of view)
4th	Pediatric and Preventive Dentistry (1-hour lecture covering dental neglect)	Child Abuse and Neglect (15 hours covering all aspects of child abuse and neglect)
5th	None on this topic	None on this topic
6th	None on this topic	None on this topic

Table 3. Respondents' educational experience on the topic of child abuse and neglect in relation to year of study, by percentage of respondents

Question	Answer	Year of Education						Total
		1st	2nd	3rd	4th	5th	6th	
1. Have you come across the topic of child abuse and neglect during your time at the University of Zagreb School of Dental Medicine?	Yes	54.0%	1.2%	8.0%	5.8%	49.1%	79.3%	33.6%
	No	46.0%	98.9%	92.1%	94.2%	50.9%	20.7%	66.4%

Note: Percentages may not total 100% because of rounding.

Table 4. Respondents' knowledge of signs of physical abuse in relation to year of study, by percentage of correct responses to statement

Statement	Correct Response	Year of Education						Total	p-value
		1st	2nd	3rd	4th	5th	6th		
1. Bruises on the cheek may indicate slapping or grabbing of the face.	True	93.7%	92.0%	95.5%	95.7%	94.8%	98.3%	94.7%	0.866
2. Repeated injury to the dentition resulting in avulsed teeth or discolored teeth may indicate repeated trauma from abuse.	True	88.1%	82.8%	81.8%	88.4%	77.6%	94.8%	84.7%	0.074
3. Bruises noted around the neck are usually associated with accidental trauma.	False	55.6%	59.8%	52.3%	65.2%	62.1%	74.1%	60.2%	0.041*
4. Burns are noted in many child abuse cases, and they may have the shape of a heated object.	True	46.8%	54.0%	63.6%	55.1%	73.3%	77.6%	60.7%	<0.001*
5. 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.	True	51.6%	42.5%	58.0%	42.0%	57.8%	77.6%	54.0%	0.007*
6. A strong correlation exists between dental neglect and presence of physical neglect.	True	27.0%	35.6%	46.6%	36.2%	63.0%	69.0%	44.9%	<0.001*
7. Accidental injuries usually occur in areas overlying bony prominences (e.g., the forehead or cheekbone).	True	53.2%	56.3%	50.0%	56.5%	57.8%	58.6%	55.2%	0.743
8. Orofacial trauma is found in 50-75% of children with diagnosed physical abuse.	True	39.7%	23.0%	40.9%	36.2%	43.1%	44.8%	38.1%	0.121
9. Injuries to the ears, sides of the face and neck, and tips of shoulders are more often caused by accidents during child play and everyday life.	False	46.8%	47.1%	29.6%	40.6%	35.3%	65.5%	42.8%	0.002*

*Significant at $p < 0.05$.

year of study. Students' reported knowledge of the signs of the diagnostic indicators of abuse is shown in Table 6.

The range of correct answers with regard to dentists' legal obligation for reporting varied from 48.3 percent to 70.7 percent of the respondents. To the question "To whom must a report be sent?," 44.8 to 69.3 percent of the respondents answered correctly, depending on their year of study. Between 46.0 and 70.5 percent of the respondents reported knowing the consequences of not reporting and thus not meeting dentists' legal responsibility (Table 7).

Discussion

This study is the first one conducted among Croatian dental students on the topic of child abuse and neglect. Research conducted in Croatia among

general practitioners, family doctors, and pediatricians has found that their knowledge of child abuse and neglect is inadequate and that most of them feel the need for additional education.¹⁷ Studies in other countries have found that dentists lack knowledge of the signs and symptoms of child abuse and that they feel unprepared for the role of helping protect children from abuse.¹⁸⁻²⁰

Dentists are in a unique position to detect early signs of child abuse and neglect as many of the signs appear in the orofacial area, thus making the dentist's role and responsibility in protecting children very important.^{21,22} Al-Jundi et al.¹⁵ found in their research that the topic of abuse and neglect is mentioned in lectures in dental schools but not addressed in a problem-solving setting, so it does not prepare future dentists adequately. Thomas et al.¹⁶ found that 100 percent of senior-year dental students in their study had received information on child abuse and neglect,

Table 5. Respondents' knowledge of signs of emotional and sexual abuse and neglect in relation to year of study, by percentage of correct responses to statement

		Year of Education							
Statement	Correct Response	1st	2nd	3rd	4th	5th	6th	Total	p-value
1. Emotional abuse consists of continual insulting of a child, name calling, shaming, and mocking in the presence of others.	True	100%	96.6%	97.7%	97.1%	95.7%	100%	97.8%	0.403
2. The abuser is most commonly a stranger to the child.	False	96.8%	82.8%	87.5%	92.8%	87.1%	96.6%	90.4%	0.027*
3. Psychosomatic complaints by the child may indicate a problem relating to sexual abuse.	True	31.0%	26.4%	54.6%	37.7%	50.0%	58.6%	41.9%	<0.001*
4. Seductive behaviors by a child toward the dental staff may be indicative of prior sexual abuse of a child.	True	21.4%	25.3%	35.2%	26.1%	41.4%	58.6%	33.1%	<0.001*
5. A child's failure to make eye contact and respond to the dental staff may be a sign of sexual abuse.	True	57.9%	58.6%	63.6%	53.6%	59.5%	74.1%	60.5%	0.308
6. Petechial haemorrhaging, erythema, vesicles, and lesions on the child's oral mucous membrane can point to oral sex and sexual abuse.	True	38.1%	36.8%	46.6%	36.2%	50.9%	84.5%	46.7%	<0.001*
7. Failure of the parents or guardians to follow through with dental treatment once they have been informed about a child's rampant caries may be considered:	b) child neglect	81.8%	72.4%	68.2%	82.6%	78.5%	81.0%	77.4%	0.018*
*Significant at p<0.05.									

*Significant at $p < 0.05$.

while only 28.2 percent of first- and second-year students had come across the topic.

In our study, 79.3 percent of Croatian senior-year dental students said they had come across the topic of child abuse and neglect, while only 54 percent of first-year students reported having heard lectures on the topic. First- and third-year dental students at the University of Zagreb can learn about the topic of child abuse and neglect in the courses Sociology of the Dental Profession and Oral Hygiene. These courses are electives (Table 2) and are only attended by some of the students. Additionally, because the courses deal with topics that are not closely related to child abuse, any child abuse issues will be covered only superficially. The majority of the students only really encounter the topic of child abuse and neglect as an entity on its own during the summer semester of the fourth year of study. In the mandatory course Pediatric and Preventive Dentistry, a one-hour lecture is dedicated to child abuse and neglect, especially to dental neglect. Then, a small number of interested

fourth-year students will in addition take the elective course Child Neglect and Abuse, in which they attend fifteen hours of lectures on this topic. Unfortunately, only 5.8 percent of responding fourth-year students reported having encountered the topic of child abuse because we conducted our survey at the end of the winter semester and the very beginning of the summer semester. Significantly, only 60 percent of the total number of students in our study really felt they had come across the topic of child abuse and neglect. This is because the course (Child Neglect and Abuse) that deals with the topic in detail is an elective and is therefore attended by only some of the students.

Despite the fact that dental schools in other countries include the topic of abuse in their curricula, results from studies in those countries have found that students do not have enough knowledge of the signs of child abuse and neglect.^{15,16,23} Similarly, students in our study were found to be lacking knowledge about some of the signs of physical and sexual abuse. For example, fewer than half of the respondents were

Table 6. Respondents' knowledge of signs of diagnostic indicators of abuse in relation to year of study, by percentage of correct responses to statement

Statement	Correct Response	Year of Education						Total	p-value
		1st	2nd	3rd	4th	5th	6th		
1. Child abuse and neglect are primarily associated with the stresses of poverty and rarely occur among middle- or high-income earners.	False	62.7%	44.8%	62.5%	63.8%	62.1%	72.4%	60.9%	0.045*
2. Children who have been abused usually tell someone soon after the abuse.	False	88.1%	71.3%	85.2%	89.9%	77.6%	89.7%	83.1%	0.034*
3. If a child readily states that an adult has caused harm, the accusation should be addressed.	True	87.3%	79.3%	85.2%	84.1%	75.0%	67.2%	80.5%	0.006*
4. Child abuse may be indicated if a parent describes a child's injury as a self-inflicted injury.	True	61.9%	63.2%	71.6%	47.8%	67.2%	63.8%	63.2%	0.038*
5. Child abuse may be indicated if a parent reports a child's injury as a sibling-inflicted injury.	True	44.4%	35.6%	69.3%	46.4%	58.6%	60.3%	52.0%	0.001*
6. Child abuse may be indicated if a parent delays seeking medical attention for a child's injury.	True	89.7%	77.0%	93.2%	85.5%	92.2%	91.4%	88.4%	0.033

*Significant at $p < 0.05$.

Table 7. Respondents' knowledge of dentists' legal responsibilities regarding reporting abuse in relation to year of study, by percentage of correct responses to statement

Statement	Correct Responses	Year of Education						Total	p-value
		1st	2nd	3rd	4th	5th	6th		
1. According to the law of the Republic of Croatia (RH), a dentist is obligated to:	c) file a report in all cases suspicious of child abuse and/or neglect	60.3%	48.3%	70.5%	63.8%	57.8%	70.7%	61.0%	0.215
2. A dental medicine doctor in RH can file a report:	d) to social services, the police, or the appropriate state attorney's office	48.4%	44.8%	69.3%	65.2%	66.4%	62.1%	58.6%	0.014*
3. If a dentist does not report the abuse of a child or minor of which he or she learned while performing his duties, he or she:	d) can be issued a monetary fine or sentenced to up to three years in prison	52.4%	46.0%	70.5%	55.1%	64.7%	63.8%	58.5%	<0.001*

*Significant at $p < 0.05$.

aware that orofacial trauma is found in a high percentage of physically abused children and that they should be suspicious when injuries occur on the ears, sides of the face and neck, and tips of shoulders. In psychosomatic complaints, the presence of seductive

behaviors by a child toward the dental staff together with erythema, vesicles, and lesions on the child's oral mucous membrane would be possible indications of sexual abuse. Fewer than half of the students in our study recognized this association. Recognizing signs

and symptoms of abuse is the first and crucial step in helping abused children. If students have a lack of knowledge about the signs and symptoms of abuse, we cannot expect that as practicing dentists they will be able to recognize and report suspected cases. Similar results were reported in an article by Al-Jundi et al.,¹⁵ which found that neither undergraduate nor graduate dental students were prepared sufficiently for the important role of a dentist in helping to protect children from abuse. Thomas et al.¹⁶ in their research also found a low number of correct responses regarding knowledge of diagnostic indicators and signs of physical and sexual abuse; they noted that these results represented a lack of wider knowledge of what the term “abuse and neglect” means.

In our research, senior students demonstrated more knowledge of the topic of child abuse and neglect than their more junior colleagues. This pattern can be explained by the fact that, until the fourth year, students are not taught about clinical recognition of the signs and symptoms of abuse, but are merely given information about the social aspects and legal responsibilities on the topic. In our study, more than 60 percent of the responding students were aware that they have to make a report in all cases they suspect of being child abuse and neglect. Similar to the findings of Thomas et al.,¹⁶ the percentage of correct responses to this question in our study was highest among senior-year students. A total of 58.6 percent of our students correctly answered the question about where to report a suspicion of abuse or neglect. This percentage was higher than the response reported by Thomas et al.,¹⁶ as well as a study by Zavras and Pai²³ that found over half of their students (53.1 percent) did not know to whom to make a report. More than 60 percent of our senior-year students reported knowing the consequences of not reporting abuse.

Our study identified a lack of knowledge regarding child abuse and neglect issues amongst Croatian dental students at the University of Zagreb. These findings are similar to findings in other studies^{15,16,23,24} and show the need for improvement in the undergraduate curriculum and mandatory exposure to these issues.

Conclusions

The following conclusions can be drawn from our research. The level of knowledge of dental students at the University of Zagreb with regard to the

topic of child abuse and neglect was variable and needs to be improved. One of the main reasons for this need is because detailed exposure to the topic is only covered in an elective course as opposed to a mandatory course. Most of these dental students are therefore not well prepared for their very important role in protecting children from abuse and neglect. Our study also found a difference in the knowledge of students with regard to their year of study. This variation can be explained by the timing of their current mandatory and elective exposure.

We recommend that a mandatory, independent course that deals exclusively with child abuse and neglect issues should be included in the dental curriculum before students begin their clinical studies. We also recommend that first- and second-year nonclinical students should be exposed to child abuse and neglect problems through workshops including landmark cases and case discussions as well as through contact with other health and social care staff dealing with child abuse and neglect.

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