Brazilian dentists' knowledge regarding immediate treatment of traumatic dental injuries

de França RÍ, Traebert J, de Lacerda JT. Brazilian dentists' knowledge regarding immediate treatment of traumatic dental injuries.

Abstract – The objective of this study was to assess the knowledge of dentists working in the city of Tubarão, southern Brazil, about the immediate treatment of traumatic dental injuries. A cross-sectional study was carried out involving all dentists who were working in the city in 2004 ($n = 108$). Data were collected through self-applied questionnaires with questions about sex, time elapsed since graduation, whether the dentists had attended postgraduate courses and also four questions about traumatic dental injuries in which the dentists selected the best answer. The response rate was 86.1%. For the two questions related to dental avulsion, 36.6% and 16.1% of professionals respectively, chose the correct answer according to the literature. For the question related to coronal fracture, 75.3% chose the correct answer. For the questions related to an incident without dental avulsion or fracture, 73.1% chose the correct answer. Time elapsed since graduation was the only variable statistically associated with the correct answer for the question related to coronal fracture. A significantly greater number of professionals with ≤10 years of experience chose the correct answer when compared with professionals with >10 years experience ($P < 0.001$). It can be concluded that the great majority of professionals would not intervene according to the literature in the cases of avulsion. Less time elapsed since graduation was statistically associated with the correct answer in the coronal fracture case.

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The high rates of violence, traffic accidents, and a greater participation of children in sporting activities has contributed to traumatic dental injuries (TDI) becoming an important oral health problem (1, 2). The high prevalence of TDI reported in numerous studies (2–5), the high impact on children's lives caused by such events (2) and the large number of cases at dental emergency services (6) also have contributed in making this a serious public health problem.

Immediate and appropriate treatment, together with long-term follow up, lead to a favourable prognosis for the traumatized tooth. Without immediate and appropriate treatment and long-term follow up the chances of numerous complications in the dental elements involved, such as pulp necrosis, and even an indication for extraction (7, 8) increase.

In order to ensure effective care, the dentist requires ample knowledge of the various types of TDI and also of the recommended treatment for each of these. Many cases of unsuccessful treatment result from negligence on the part of the dentist at the initial consultation, inadequate follow up and even over treatment (8).

Andreasen and Andreasen (9) argued that there are few professionals interested in studying TDI, with the result that the only information available refers to treated cases, and little is known about long-term complications resulting from TDI. In addition, many problems can arise because of the failure of professionals to make clear to parents the necessary care for the child who has suffered TDI and about the importance of periodic visits after the first consultation.

Thus, the objective of this study was to examine the knowledge of dentists practising in the area of Tubarão, Brazil, regarding the management and treatment in cases of TDI.

Methods

All dentists ($n = 108$) practising in the area of Tubarão, Brazil, in the first semester of 2004, formed the study population.

Information was collected by means of a structured interview containing questions concerning sex, time elapsed since initial qualification and attendance on postgraduate courses. In addition, four questions were asked regarding procedures related to the treatment of TDI. The dentist was asked how they would act in the following situations: (i) avulsion of the right upper central incisor in a 12-year-old patient, who has brought the tooth with him/her; (ii) avulsion of the right upper central incisor in a 12-year-old patient, who has not brought the tooth with him/her; (iii) fracture of the enamel and dentine of the right upper central incisor in a 12-year-old patient; (iv) a 12-year-old patient, who had hit his/her mouth on the ground, but was unhurt.

In situation 1, the response considered correct was that in which the professional chose the alternative that contained 'the need for care of the avulsed tooth, such as washing in saline solution and apprehension by the crown; reimplantation; carrying out of contention; endodontic treatment and proservation'. In situation 2, the alternatives considered correct were 'obtain the tooth and reimplant regardless', 'carry out a clinical examination, to verify the possibility of fracture of the alveolus and the presence of root remnants', and 'carrying out a clinical and radiographic examination'. In situation 3, the alternative considered correct contained 'carrying out of anamnesis, clinical and radiographic examination, restoration or gluing and follow up of the case'. In situation 4, the alternative considered correct was 'take a case history and carry out a clinical and radiographic examination with follow up' (10–12).

The dependent variable was the level of knowledge of professionals regarding marked TDI through the proportion of responses considered correct. The following were considered as independent variables: sex, time elapsed since initial qualification and attendance on postgraduate courses.

To examine possible associations between the independent variables and the responses to each situation contingency tables were used, employing the chi-squared test or Fisher's exact test, when appropriate.

Results

Of the 108 dental surgeons, 93 professionals were interviewed, giving a response rate of 86.1%. Among those interviewed, 61 (65.6%) were male and 32 (34.4%) were female (Table 1).

The age of the dentists interviewed varied from 22 to 73 years. The most frequent age groups were 22–30 years and 31–40 years (32.3%) (Table 1).

In relation to time elapsed since qualification, the majority of dentists reported that they had less than 10 years of postqualification experience (58.1%). In relation to postgraduate education, 67% reported attendance of postgraduate courses. The specialities most frequently encountered were Dental Prosthetics, Endodontics and Orthodontics.

Of all those interviewed, 36.6% (95% CI = 26.8–46.4%) chose the response considered correct for situation 1 while the remaining professionals said they would adopt alternative approaches or even partially correct approaches. In situation 2, only 16.1% (95% CI = 8.7–23.5%) of the dentists chose the alternatives considered correct. In situation 3, 75.3% (95% CI = 66.6–84.0%) of the dentists chose the alternative considered correct and in situation 4, the percentage of professionals who gave the response considered correct was 73.1% (95% CI = 64.1–82.1%). In situation 3, the variable 'time since qualification' was found to be statistically associated with the response considered correct ($P < 0.001$). Thus, professionals with up to 10 years of postqualification experience gave a higher

Table 1. Distribution of the interviewed professionals by age group and sex (Tubarão, Brazil, 2004)

Variables	Frequency (*n*)	Percentage (%)
Age groups		
22–30	30	32.3
31–40	30	32.2
41–50	17	18.3
51–60	8	8.6
>60	8	8.6
Sex		
Male	61	65.6
Female	32	34.4
Total	93	100.0

Table 2. Associations between sex, time since qualification, postgraduate study and responses to situations 1, 2, 3 and 4 (Tubarão, Brazil, 2004)

	Situation 1		Situation 2		Situation 3		Situation 4	
Variables	Correct *n* (%)	Incorrect *n* (%)	Correct *n* (%)	Incorrect *n* (%)	Correct *n* (%)	Incorrect *n* (%)	Correct *n* (%)	Incorrect *n* (%)
Sex								
Male	22 (36.1)	39 (63.9)	09 (14.8)	52 (85.2)	44 (72.1)	17 (27.9)	44 (72.1)	17 (27.9)
Female	12 (37.5)	20 (62.5)	06 (18.8)	26 (81.3)	26 (81.3)	06 (18.8)	24 (75.0)	08 (25.0)
P-value	0.891		0.619		0.333		0.767	
Postgraduate education								
Yes	23 (37.1)	39 (62.9)	12 (19.4)	50 (80.6)	49 (79.0)	13 (21.0)	46 (74.2)	16 (25.8)
No	11 (35.5)	20 (64.5)	03 (9.7)	28 (90.3)	21 (67.7)	10 (32.3)	22 (71.0)	09 (29.0)
P-value	0.879		0.370		0.234		0.741	
Time since qualification								
Up to 10 years	18 (46.2)	21 (53.8)	06 (15.4)	33 (84.6)	37 (94.9)	02 (5.1)	31 (79.5)	08 (20.5)
>10 years	16 (29.6)	38 (70.4)	09 (16.7)	45 (83.3)	33 (61.1)	21 (38.9)	37 (68.5)	17 (31.5)
P-value	0.103		0.868		<0.001		0.239	

*Chi-squared or Fisher's exact test.

proportion of correct responses than their colleagues with greater than 10 years of experience (Table 2).

Discussion

The objective of this study was to examine the knowledge of dentists practising in the city of Tubarão, Brazil, in 2004, regarding the immediate procedures after the occurrence of TDI. The response rate can be considered good for this type of study. The principal reason for a lack of response was professionals declining to participate in the study.

Some authors believe that the immediate treatment for avulsion is reimplantation, even in adverse conditions, advising that in this situation this procedure should be viewed as an attempt to recover functional and aesthetic characteristics of the buccal cavity. In this case the tooth would be considered a temporary restoration until the moment at which definitive treatment can be planned (10–12). The installation of a permanent prosthesis or implant in a 12-year-old patient reveals a lack of attention to the fact that a patient of this age is still in the period of bone growth and development (13).

The avulsed tooth should be reimplanted as soon as possible and the use of an appropriate storage medium together with minimal manipulation of the root and alveolar surface will promote the success of the intervention (10–12, 14, 15). Only one (1.1%) professional in this study mentioned care of the avulsed tooth, and immersion in citric acid 50% in cases of a long extra-alveolar period, while three (3.2%) reported carrying out endodontic treatment after 1 week. This finding displays a lack of knowledge regarding the case management of teeth with a closed apex. Andreasen and Andreasen (1) recommend pulp extirpation and filling of the root canal with calcium hydroxide 1 week after the initial consultation. Furthermore, endodontic treatment should be carried out after 6–12 months, provided there is no sign of inflammatory reabsorption.

Clinical conduct in cases of enamel fractures can vary from a simple abrasion and polishing of the acute margins of the enamel to prevent lacerations of the tongue and lips, to a more elaborate restoration and gluing of the enamel fragment (10–12). This approach was mentioned by the majority of dentists in this study, confirming the results of another Brazilian study (8). According to Andreasen and Andreasen (1), follow up is necessary at 1 month, 2 months and 1 year after the fracture of enamel and dentine, and at this point the practitioner should look for signs of pulp necrosis, such as loss of sensitivity, discoloration of the crown and periapical lesion.

With regard to situation 3, the variable 'time since qualification' was found to be strongly associated with the response considered correct ($P < 0.001$). Thus, professionals with up to 10 years of experience returned a higher proportion of correct answers than their colleagues with greater than 10 years of experience. Hypothetically, the recent transformation in knowledge related to the treatment of TDI and the corresponding changes in undergraduate and postgraduate courses may have influenced the decision-making process.

In contrast, Andreasen and Andreasen (9) argued that there are few professionals interested in studying TDI, resulting in a situation in which the only information available relates to those cases already treated, demonstrating the lack of scientific research on the subject. In addition, TDI leads to complications whose aetiology and treatment are poorly understood, the long-term prognosis is unclear and, moreover, the fact that the professional responsible for the first consultation is often not the professional who will carry out long-term follow up, can also affect the interest of dentists in preparing themselves

for the treatment of TDI. The results demonstrate that despite the necessity for follow up by a dental surgeon in cases of dental trauma, the former is not always adequately prepared for this (5).

The low level of knowledge of dentists regarding the management of TDI revealed in another international study (16) and in Brazil (8, 15) was confirmed in this study. Such results may indicate neglect of treatment for dental trauma, which requires reflection on the reasons for such neglect. The wide variability of methodology applied to the definition of the types of TDI, the lack of standardization in treatment techniques and standard protocols for the follow up of any future complications may be affecting the preparedness of professionals to deal with the problem.

It can be concluded that the responses of the dentists from the city of Tubarão, Brazil, show a wide variability of indicated procedures for the four situations of TDI proposed and that the great majority of the professionals would not follow the approaches most recommended in the literature.

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