Knowledge of Brazilian general dentists and endodontists about the emergency management of dento-alveolar trauma

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Abstract – The purpose of this study was to determine Brazilian dentists' knowledge of emergency management of dento-alveolar trauma. A two-part questionnaire containing questions on demographic data and knowledge were mailed to 230 general dental practitioners (GDPs) and 70 endodontists. Questionnaires were returned by 42.6% of the GDPs and 62.8% of the endodontists. The survey data were statistically analyzed using Mann-Whitney U-test for practitioners' knowledge and Pearson's correlation coefficient for association between knowledge scores and practitioner age or years since graduation. The mean knowledge score of endodontists was significantly greater than for GDPs (P < 0.0001). Dentists with trauma experience in their practices and those who had attended postgraduate courses on dental trauma had a significant higher mean knowledge score. In contrast, there was a poor correlation between the knowledge score and the ages of the respondents (r = 0.086) or the years since graduation (r = 0.108). In conclusion, this survey showed a poor knowledge of dental trauma management among the surveyed dentists and highlights the need to develop strategies to improve the knowledge base in this area of dentistry for the benefit of the dental trauma patient.

It is recognized today that traumatic dental injuries are widespread (1-3) and represent a serious problem among children. Trauma may exceed dental caries and periodontal disease as the most significant threat to dental health among young people (4, 5). Studies in the United Kingdom and Scandinavia have shown that 34 and 22%, respectively, of schoolchildren had experienced trauma in the permanent dentition (6, 7). The majority of dental injuries involves the anterior teeth and thus may have both physical and psychological impact. Repair of injured teeth can involve anything from a simple restoration to extensive prosthetic reconstruction (6).

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The prognosis of traumatized teeth depends on prompt and appropriate emergency management. Knowledge of dentists about dento-alveolar trauma is critical to the prognosis of traumatized teeth especially for those that are avulsed (1, 8, 9). Despite its importance, the literature contains few reports on dental professionals' knowledge of about emergency procedures for dental traumatic injuries. Furthermore, there are no published data for Brazilian dentists in this area.

Therefore, the purpose of this study was to evaluate, by means of a survey, Brazilian dentists' and endodontists' knowledge about emergency management of dento-alveolar trauma in Brazil.

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Method

A 10-item questionnaire (Appendix) was developed and distributed to 230 general dental practitioners (GDPs) and 70 endodontists randomly selected from different parts of Sao Paulo city in Brazil. The survey was carried out between March and July 2003. Part I of the questionnaire requested personal and professional data including the age and gender of the practitioner, practice experience with dental trauma patients, and educational background. Part II collected data on the knowledge of practitioners about managing six hypothetical dental traumatic injuries and availability of emergency services with these injuries.

Mean knowledge scores were calculated and a Mann–Whitney *U*-test used to evaluate the knowledge of traumatic injuries relative to the respondents' personal and professional information. Pearson's correlation coefficient was used to test for association between knowledge scores and the age of the practitioner and the years since graduation. The level of confidence was set at P < 0.05.

Results

Questionnaires were returned by 98 of 230 GDPs (42.6%) and 44 of 70 endodontists (62.8%). The demographic data from the completed surveys are summarized in Table 1. Of a maximum of 10 correct responses (Appendix) to questions on the emergency management of dental injuries, respondents' scores ranged from 2 to 10 with a mean 6.82. The mean knowledge scores for demographic data are found in the Table 2.

Endodontists had an overall mean of 7.7 \pm 1.3, which was significantly higher score than the GDPs mean knowledge score of 6.4 \pm 1.6 (*P* = 0.0001).

Table 1. Demographic characteristics of respondents (n = 142)

Demographic data	Number (%)
Age	
Mean ± SD	30.5 ± 7.8 years
Range	21-78 years
Years since graduation	
Mean ± SD	7.6 ± 7.6 years
Range	0.2-53 years
Gender	
Male	47 (33.1)
Female	95 (66.9)
Identity	
GDPs	98 (69.0)
Endodontists	44 (31.0)
Postgraduate courses	
Yes	82 (57.7)
No	60 (42.3)
Trauma in practice	
Yes	122 (85.9)
No	20 (14.1)

Table 2. Factors associated in dentists' mean knowledge scores of management of dental injuries (SD in parentheses)

	Mean scores (mean ± SD)	<i>P</i> -value
Gender		
Male	6.7 ± 1.7	
Female	6.9 ± 1.6	0.466
Identity		
GDPs	6.4 ± 1.6	
Endodontists	7.7 ± 1.3	0.0001*
Postgraduate courses		
Yes	7.2 ± 1.7	
No	6.4 ± 1.5	0.001*
Trauma practice		
Yes	7,0 ± 1.6	
No	6,0 ± 1.6	0.012*

*Significant difference.

Dentists who had attended postgraduate courses on dental trauma had a significant higher score than those who had received no additional training (P = 0.01). Respondents who had practice experience with dental trauma patients showed a significantly higher mean score than those who managed no trauma patients in their practice (P = 0.012). In contrast, practitioners' gender had no effect on the mean knowledge score (Table 2). There was a poor correlation between the knowledge score and the age of the practitioner (r = 0.086, P = 0.308) or the years since graduation (r = 0.108, P = 0.202).

Discussion

In our study, an indirect approach was used to collect the data by mailing a questionnaire to randomly selected general dentists and endodontists. Although, the response rate of the surveyed practitioners was disappointing, the 44.5% response rate is generally considered satisfactory. An improved response rate might have been achieved by sending out a preliminary letter explaining the intent and importance of the survey and by using follow-up mailings of the survey to non-responders.

Because trauma to anterior teeth in children can pose long-term threats to dental health, it is important that those suffering dental injuries receive effective emergency and definitive treatment. Therefore, the actions of dentists involved likely will determine the clinical outcome. This, in turn, these actions will be qualitatively related to the level of the knowledge for the delivery of appropriate care (8).

The completed questionnaires showed that the level of knowledge of the surveyed dentists was not high, especially among the GDPs who showed a significantly lower score compared with the endodontists. These data indicate that the specialization is an influencing factor in the knowledge about the emergency management of dento-alveolar injuries. Another interest finding in the present study is that the level of knowledge of the practitioners on some issues was extensive, while on the others it was less satisfactory. For example, in the case of emergency treatment of avulsed incisors, 99.3% (141) of dentists knew that the highest success rate was achieved following replantation within 30 min and the best storage medium for avulsed teeth was milk or saline. However, only 59.1% (84) knew the semi-rigid splint is indicated for avulsed teeth and it should be splinted for 2 weeks.

As demonstrated in this study, the surveyed dentists who attended postgraduate course showed a significantly positive effect on the knowledge level, these results agreed with Hamilton et al. (8). Therefore, it seems clear that an effective approach to increasing the knowledge base of dental practitioners is to make these courses more attractive for more practitioners to take or perhaps to even make them compulsory.

The survey showed that few dentists, in general, and even fewer GDPs, specifically, would provide the quality of emergency management and treatment necessary to enhance the survival time of traumatized teeth. Hence, there is a compelling reason to increase dentists' awareness of the important role they can play in managing cases of traumatic dental injuries. Lectures and seminars to dentistry students, continuing education courses to the dentists in the emergency rooms in hospitals, the development and use of a formal protocol of treatment for dental injuries are some possible ways to accomplish this goal (10). Dental students should be also encouraged to participate extramural dental education in hospitals, community health centers, nursing homes and private dental offices (11, 12).

In conclusion, this survey demonstrated a generally poor knowledge among the dentists, especially the GDPs on how to treat patients with dental traumatic injuries. It highlights the need to develop strategies to improve the knowledge of dentists who are potentially on the front line to provide emergency diagnosis and treatment for patients who incur dental trauma. *Acknowledgements* – The authors would like to thank the dentists involved in this study for their cooperation. We are grateful to Dr Sidney Oda for his computer technical assistance.

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Appendix

Knowledge on management of dental trauma survey of dentists, Brazil
Please answer Parts I and II of the questionnaire:
Part I: Personal and professional information, please tick at the appropriate box.
Q.1 Gender:
() male
() female
Q.2 Age: please indicate
Q.3 Graduate of which dental school? (please indicate)

Q.4 Years since graduation? (please indicate)

- Q.5 Please indicate as appropriate:
- () general dental practitioner
- () endodontists
- Q.6 Dental trauma experience:

() yes

() no

Q.7 Postgraduate courses about the emergency management of dental trauma injuries:

() yes

() no

Part II: Case study. Please read carefully the following six cases, and tick your best choice.

Case 1

A 7-year-old boy who was hit in the face with a softball about 1 h before for clinical and radiographic examination. It showed a crown fracture involving enamel and dentin with pulp exposure. The stage of root formation was uncompleted (open apex).

Q.1 The immediate treatment is:

- () pulpectomy
- $(x) \ pulpotomy$
- () endodontic treatment in one session
- Q.2 The medication used for the treatment in this case is:
- $(\)$ paramonochloroform
- (x) calcium hydroxide
- () formalin
- () no medicament needs to be employed

Case 2

A mother called to the dental office explaining that her daughter have 'knock-out' her tooth at this exact moment.

Q.3 What are the instructions should be given to the mother?

() Store the tooth in the water and go to the dental office immediately.

() Store the tooth in the ice and go to the dental office immediately.

(x) replant the tooth, and if the replantation procedure cannot be performed at this time, the tooth can then be store in saline solution and go to the dental office immediately.

Q.4 The mother and child came to the office. What is the next procedure to be done?

() thermal test, radiographic examination, endodontic treatment.

(x) radiographic examination, splint and instructions about the plaque and diet control.

() do not know.

Q.5 In this case, what kind of splint and how long should be used?

() Rigid, during 2 weeks or until the mobility of the tooth is reduced.

() Semi-rigid or rigid, a month.

(x) Semi-rigid, during 2 weeks or until the mobility of the tooth is reduced.

() no splint should be used.

Q.6 Would you prescript some medicament?

() no

() yes, antibiotic of narrow spectrum, anti-inflammatory, analgesic.

() yes, anti-inflammatory, analgesic.

(x) yes, antibiotic of extended spectrum, anti-inflammatory, analgesic.

Case 3

A patient who suffered an accident 24 h before, came to the office complaining a little pain in tooth no. 41, clinically, it showed a crown fracture involving enamel and dentin, but not exposing the pulp.

Q.7 The immediate treatment is:

- () endodontic treatment
- (x) a calcium hydroxide liner is applied to the exposed dentin. It is then decided whether an immediate restoration should be made.
- () Immediate restoration with a composite resin.

Case 4

A patient came to the office explaining an accident that she suffered the day before. After a radiographic examination, the tooth no. 21 showed a root fracture.

- Q.8 The immediate treatment is:
- () extraction of the tooth
- () endodontic treatment
- (x) thermal test, rigid splint.
- () thermal test, semi-rigid splint.

Case 5

A patient came to the office with an avulsed tooth, it has been kept dry for 7 h.

- Q.9 The immediate treatment is:
- () cleanse the root surface and alveolar socket with saline solution, replant the tooth, splint and antibiotic therapy.
- () place the tooth in a fluoride solution (2.4% sodium fluoride), cleanse the alveolar socket with saline solution, replant, endodontic treatment, splint and antibiotic therapy.
- (x) place the tooth in a fluoride solution (2.4% sodium fluoride), cleanse the alveolar socket with saline solution, endodontic treatment, replant, splint and antibiotic therapy.
- () replacement of missing teeth by prosthetic.

Case 6

A patient came to the office complaining the change of the color of tooth no. 12. He explained that the tooth has been traumatized 4 years ago. After the radiographic examination, the professional detected the presence of internal root resorption.

- Q.10 The treatment is:
- () extraction procedure
- () pulpectomy
- () endodontic treatment in one session
- (x) endodontic treatment, by means of repeating filling with calcium hydroxide before the canal is obturated definitely.

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