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Knowledge of orthodontic treatment approach of traumatized teeth by a group of Belgian general dentists, pediatric dentists, and orthodontists

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Abstract

Background/Aim: Traumatized teeth are more susceptible to complications during orthodontic tooth movement. The aim of this study was to explore current practices among Belgian dental practitioners regarding orthodontic treatment of children with a history of dental trauma.

Material and Methods: A questionnaire survey was organized among general dentists, pediatric dentists, and orthodontists in Flanders (Belgium). Questionnaires were distributed at the occasions of annual meetings or symposia. They consisted of questions regarding exposure to dental trauma and orthodontic treatment approach for patients with a dental trauma history.

Results: The questionnaire was completed by 121 general dentists, 47 pediatric dentists and 99 orthodontists. A history of dental trauma influenced referral for orthodontic treatment by general dentists and pediatric dentists moderately (median VAS scores of 5 and 6, respectively, on a scale of 0 (not at all) to 10 (utmost)), indicating uncertainty and doubt. Additional checkups during tooth movement were usually not organized by general dentists in 33.6% and by pediatric dentists in 19.1% of cases (P = 0.006). One-third of the orthodontists (33.3%) experienced tooth loss linked to orthodontic movement of a tooth with dental trauma history in at least one patient. Only a minority of the practitioners knew of the existence of specific guidelines (7.6%, 15.6% and 22.7%, respectively, of general dentists, pediatric dentists, and orthodontists) (P = 0.007). The Dental Trauma Guide was the guideline mentioned most frequently, although this tool does not contain recommendations regarding orthodontic treatment after trauma.

Conclusion: In the group of Belgian general dental, pediatric and orthodontists surveyed, there was uncertainty regarding the orthodontic management of patients with a history of dental trauma especially among general practitioners. Further educational training is recommended.

KEYWORDS
dental trauma, general dentist, orthodontic management, orthodontists, pediatric dentist

1 | INTRODUCTION

A considerable proportion of patients presenting for orthodontic treatment has a history of trauma to their permanent incisors, especially those with increased overjet and inadequate lip closure. Bauss et al[1] reported dental trauma in 10.3% of candidates for orthodontic therapy presenting in a private practice, with the highest prevalence (12.8%) in the 11-15 years age group.

It has been reported in the literature that teeth exposed to a traumatic insult are more susceptible to complications when moved orthodontically. Reported adverse events include external apical root resorption,[2,3] external cervical invasive root resorption,[4] pulp necrosis with infection,[5–7] and pulp complications such as (total) pulp obliteration.[8]

The impact these complications have on children and their parents should not be disregarded. Episodes of pain and infection, with possible impact on the general health and well-being of the child, necessitate additional dental visits, treatment and medication.[9] The more complex the dental treatment becomes, the higher the costs will be for parents and health insurance. In addition, childhood dentoalveolar trauma has a considerable impact on the Oral Health Related Quality of Life, with far-reaching implications over time.[10] Since permanent upper incisors are in most cases involved, esthetic concerns may rise with possible negative impact on self-confidence and self-esteem for the child.[11]

From the above, it is clear that it is important to document a history of dental trauma at intake for orthodontic therapy, to assess the risk of possible complications and to adopt this information in the orthodontic treatment plan. Kindelan et al[12] published an overview of the influence of dental trauma on the management of orthodontic treatment in which they recommend different waiting and observation periods prior to orthodontic tooth movement based on information available at that time. Owtad et al[13] presented management guidelines for teeth that underwent a traumatic injury during orthodontic treatment and they pointed out that only little information was available on this topic in the current literature. Day et al[14] emphasized the importance of early identification of traumatized anterior teeth with poor prognosis and they discussed treatment options applicable in this situation. From the above, it is clear that evidence-based treatment approaches are lacking.

In the literature, no information could be found on how dental practitioners currently deal with these clinical situations. Therefore, the aim of the present research was to explore current practices among a group of Belgian general dentists, pediatric dentists and

TABLE 1 Personal characteristics of participating general dentists, pediatric dentists, and orthodontists

Personal characteristics	General dentists N = 121	Pediatric dentists N = 47	Orthodontists N = 99	*P* value 1
Gender				
Male	43 (35.5%)	15 (31.9%)	25 (25.3%)	0.258
Female	78 (64.5%)	32 (68.1%)	74 (74.7%)	
	n = 121	**n = 47**	**n = 97**	
University of graduation				
KU Leuven	108 (89.3%)	16 (34.1%)	51 (52.6%)	**<0.001**
UGent	2 (1.7%)	17 (36.2%)	15 (15.5%)	
VUB	8 (6.6%)	0 (0.0%)	12 (12.4%)	
UCL	0 (0.0%)	5 (10.6%)	1 (1.1%)	
ULB	0 (0.0%)	4 (5.8%)	0 (0.0%)	
ULiège	0 (0.0%)	2 (4.2%)	0 (0.0%)	
Others	3 (2.5%)	3 (6.4%)	18 (18.6%)	
	n = 120	**n = 47**	**n = 99**	
Clinical experience				
<5 y	24 (20.0%)	22 (46.8%)	19 (19.2%)	**<0.001**
5-10 y	15 (12.5%)	7 (14.9%)	13 (13.1%)	
11-20 y	11 (9.2%)	11 (23.4%)	23 (23.2%)	
21-30 y	18 (15.0%)	4 (8.5%)	28 (28.3%)	
31-40 y	43 (35.8%)	3 (6.4%)	15 (15.2%)	
>40 y	9 (7.5%)	0 (0.0%)	1 (1.0%)	

Note: Chi-square analysis; statistical significance set at 0.05.
Bold values indicate statistical significance ($P < 0.05$).
Abbreviations: KU Leuven, Katholieke Universiteit Leuven; N, number of participants; n, number of respondents; %, percentage; UCL, Université catholique de Louvain; UGent, University Ghent; ULB, Université libre de Bruxelles; ULiège, University Liège; VUB, Vrije Universiteit Brussel; y, years; 1.

orthodontists when confronted with a child needing orthodontic treatment and presenting with a history of dental trauma.

2 | MATERIAL AND METHODS

The study was reviewed by the Medical Ethics Committee of UZ KU Leuven/Research and ethical clearance was obtained (registered under mp16590 for the survey of general dentists and mp13759 for the survey of pediatric dentists and orthodontists).

This cross-sectional study consisted of a questionnaire survey of three groups of dental practitioners in Flanders (Belgium): general dentists, pediatric dentists and orthodontists.

The first part of the questionnaire consisted of questions regarding the personal characteristics of the respondents: gender, number of years practicing dentistry, and the university they graduated from (Table 1). In the second part, questions were asked about the participant's exposure to patients who had experienced dental trauma, such as: frequency of acute or recent dental trauma in a patient younger than 12 years and an estimation of the overall percentage of patients in their dental practice who had experienced a traumatic injury to a permanent tooth before the age of 12 years (Table 2). The third part consisted of 10 questions regarding the orthodontic treatment approach for patients with a history of dental trauma (Table 3). The questions explored to what extent a history of a luxation injury influenced their decision to proceed with orthodontic treatment, whether the orthodontist requested additional information in this situation and if so, what type of information, whether they discussed the treatment plan more explicitly and if additional reviews were planned during the orthodontic treatment, whether they were ever confronted with a patient experiencing complications that could be linked to orthodontic treatment after dental trauma and whether they were ever confronted with the loss of a tooth that could be linked to orthodontic treatment after dental trauma. Finally, participants were asked whether they knew about the existence of guidelines pertaining to the orthodontic management of traumatized permanent teeth and if so, what was the source of these guidelines. The questions presented to the orthodontists were equivalent to those for general dentists and pediatric dentists, except that they were formulated from the perspective of the orthodontist.

The questionnaire was first presented to a group of seven pediatric dentistry trainees and instructors. They were asked to complete the questionnaire and to provide all possible remarks and suggestions regarding content and clarity of formulation of the questions. Based on this information, the questionnaire was further refined.

The questionnaire was distributed to general dentists, pediatric dentists and orthodontists attending annual meetings of the alumni association of dentists that graduated from the University of Leuven (KU Leuven) (*Leuvense Universitaire Tandheelkundige Vereniging*, LUTV), the annual member symposium organized by the Belgian Academy of Pediatric Dentistry (BAPD), the Ortholeuven symposium organized by the KU Leuven Department of Orthodontics, and the spring meeting of the *Belgische Beroepsvereniging van Nederlandstalige Orthodontisten* (BBNO). In all events, held in the academic year 2016-2017, the questionnaire was distributed at the beginning and collected at the end by volunteers, allowing ample time for completion. Assurances were made to prevent duplication at the latter two orthodontic events.

TABLE 2 Reported exposure to dental trauma of participating general dentists, pediatric dentists and orthodontists

	General dentists N = 121	Pediatric dentists N = 47	Orthodontists N = 99	
	n = 119	n = 47		*P* value 1
Frequency of acute trauma in children <12 y of age (%)				
Weekly	4 (3.4%)	18 (38.3%)	-	**<0.001**
Monthly	36 (30.3%)	19 (40.5%)	-	
3-monthly	36 (30.3%)	8 (17.0%)	-	
6-monthly	23 (19.3%)	2 (4.3%)	-	
Yearly	18 (15.1%)	0 (0.0%)	-	
Never	2 (1.7%)	0 (0.0%)	-	
	n = 117	n = 46	n = 98	
Patients with history of dental trauma on permanent tooth <12 y of age (%)				
<5%	50 (42.7%)	6 (13.0%)	34 (34.7%)	**<0.001**
5%-10%	40 (34.2%)	14 (30.4%)	41 (41.8%)	
11%-20%	19 (16.2%)	18 (39.1%)	13 (13.3%)	
21%-30%	8 (6.8%)	6 (13.0%)	8 (8.2%)	
31%-40%	0 (0.0%)	1 (2.2%)	2 (2.1%)	
>40%	0 (0.0%)	1 (2.2%)	0 (0.0%)	

Note: Chi-square analysis; statistical significance set at 0.05.
Bold values indicate statistical significance ($P < 0.05$).
N, number of participants; n, number of respondents; %, percentage; y, years; 1.

TABLE 3 Orthodontic treatment approach of patients with a history of dental trauma of the luxation type by participating general dentists, pediatric dentists and orthodontists

	General dentists N = 121	Pediatric dentists N = 47	Orthodontists N = 99	
	n = 118	**n = 47**	**n = 97**	***P* value 1**
Influence on referral for orthodontic treatment				
VAS (mean ± SD)	4.76 ± 3.14	4.94 ± 2.89	4.46 ± 2.81	0.622
VAS (median)	5	6	4	
VAS (range)	0-10	0-10	0-10	
	n = 116	**n = 45**	**n = 97**	
Orthodontist's hesitation for treatment				
VAS (mean ± SD)	3.22 ± 2.59	4.31 ± 2.47	3.37 ± 2.53	**0.048**
VAS (median)	3	4	3	
VAS (range)	0-10	0-9	0-9	
	n = 111	**n = 47**	**n = 99**	
Request for additional information by orthodontist				
No, mostly not	53 (47.7%)	13 (27.7%)	0 (0.0%)	**<0.001**
Sometimes	41 (36.9%)	21 (44.7%)	14 (14.1%)	
Yes, almost always	17 (15.3%)	13 (27.7%)	85 (85.9%)	
	n = 97	**n = 46**	**n = 93**	
Type of additional information				
Trauma history	52 (52.6%)	34 (73.9%)	85 (91.4%)	0.342
Radiographs	81 (83.5%)	35 (76.1%)	93 (100.0%)	
Clinical pictures	18 (18.6%)	6 (13.0%)	30 (32.3%)	
Treatment performed	50 (51.5%)	29 (63.0%)	81 (87.1%)	
Other	0 (0.0%)	2 (4.3%)	3 (3.2%)	
	n = 114	**n = 47**	**n = 98**	
More explicit discussion of treatment plan				
No	40 (35.1%)	3 (6.4%)	2 (2.1%)	**<0.001**
Sometimes	53 (46.5%)	33 (70.2%)	69 (70.4%)	
Yes, always	21 (18.4%)	11 (23.4%)	27 (27.5%)	
	n = 113	**n = 47**	**n = 99**	
Additional checkups planned by general / pediatric dentist				
No	38 (33.6%)	9 (19.1%)	39 (39.4%)	**0.006**
Sometimes	44 (38.9%)	20 (42.6%)	47 (47.5%)	
Always	31 (27.4%)	18 (38.3%)	13 (13.1%)	
	n = 114	**n = 47**	**n = 99**	
Request for additional checkups by orthodontist				
No	54 (47.4%)	21 (44.7%)	12 (12.1%)	**<0.001**
Sometimes	54 (47.4%)	21 (44.7%)	42 (42.4%)	
Always	6 (5.3%)	5 (10.6%)	45 (45.5%)	

Note: Chi-square analysis for categorical data; statistical significance set at 0.05.
Bold values indicate statistical significance ($P < 0.05$).
Abbreviations: N, number of participants; n, number of respondents; % = percentage; SD = standard deviation; VAS Visual Analogue Scale, 0-10 with 0 = none and 10 = very strongly; ANOVA for continuous variables; 1.

Questionnaire data were entered in a database using Excel 2013 (Microsoft). Tools provided in this software program were used to derive summary statistics and for comparison of results obtained in the different groups. Findings were compared between groups using chi-square tests (for categorical variables) and ANOVA (for continuous variables). Significance level was set at 0.05.

3 | RESULTS

The questionnaires were completed by 121 general dentists, 47 pediatric dentists, and 99 orthodontists, representing, respectively, 34%, 71%, and 63% of those attending the various meetings. Most participants were female, accounting for two-thirds up to three-quarters of the respondents (Table 1). Among general dentists, most of the respondents graduated from KU Leuven (89.3%). Of the pediatric dentists, one out of three was trained at Ghent University (UGent) and a comparable proportion at KU Leuven. More than half (52.6%) of the orthodontists graduated from KU Leuven A considerable group of general practitioners (43.3%) reported more than 30 years of clinical experience, but also young general dentists were well represented with 32.5% having less than 10 years of clinical practice. A large group of the pediatric dentists (46.8%) reported having less than 5 years of clinical experience. The distribution of orthodontists over the different age categories was more even with the largest group (28.3%) reporting between 21 and 30 years of professional activity.

General dentists reported they were confronted in their practice with an acute or recent dental trauma in a child below 12 years of age at least monthly (30.3%) or 3-monthly (30.3%), while most of the pediatric dentists reported seeing such cases at least monthly (78.7%) ($P < 0.001$) (Table 2). In general dental practice, most dentists reported a history of dental trauma at young age in less than five percent of their patients. Pediatric dentists reported most often (39.1%) that this was the case in 11 up to 20% and orthodontists (41.8%) in five up to 10% of their patients ($P < 0.001$).

When participants were asked to what extent a history of dental trauma of the luxation type influenced their decision for referral of the patient for orthodontic treatment, a wide range of answers was obtained (Table 3). Median VAS scores were situated between four (among orthodontists) and six (pediatric dentists), with mean values slightly below five in all groups. Hesitation on behalf of the orthodontist for treating a dental trauma patient was perceived as low to moderate by both general dentists and pediatric dentists.

Both general dentists and pediatric dentists indicated that a request for additional information was launched by the orthodontist sometimes (36.9% and 44.7%) or mostly not (47.7% and 27.7%), while orthodontists reported that they almost always requested additional information (85.9%) ($P < 0.001$). When additional information was asked, this consisted in most cases of radiographs as reported by 83.5% of general dentists, 76.1% of pediatric dentists and 100.0% of orthodontists, followed by trauma history and details about the trauma treatment that was performed (51.5%, 63.0%, and 87.1%) ($P = 0.342$).

Both orthodontists and pediatric dentists reported that the orthodontic treatment plan for these patients was discussed more explicitly, while more than one-third of the general dentists indicated that this was never the case.

Additional reviews during orthodontic treatment were not standard among general dentists (33.6% replied they did not plan this at all), while pediatric dentists reported to schedule this sometimes (42.6%) or always (38.3%).

General dentists and pediatric dentists agreed very well regarding the question whether orthodontists requested additional reviews in patients with a history of dental trauma. Almost half of them indicated that this was never the case (47.4% and 44.7%) and comparable numbers that this was only sometimes the case. Orthodontists presented a different answering pattern, with almost half of them replying that they always asked for more specific follow up.

TABLE 4 Complications linked to orthodontic treatment of patients with a history of dental trauma of the luxation type, reported by participating general dentists pediatric dentists and orthodontists

	General dentists N = 121	Pediatric dentists N = 47	Orthodontists N = 99	
	n = 116	**n = 47**	**n = 97**	***P* value 1**
Complications linked to orthodontic treatment of traumatized teeth				
Yes	44 (37.4%)	19 (40.4%)	64 (66.0%)	**<0.001**
No	72 (62.1%)	28 (59.6%)	33 (34.0%)	
	n = 34	**n = 10**	**n = 33**	
If yes, number of complications seen				
Mean (± SD)	3.03 ± 2.37	2.70 ± 1.89	3.61 ± 2.93	0.516
Median	2	2	2	
Range	1-10	1-7	1-10	
	n = 117	**n = 47**	**n = 99**	
Loss of tooth linked to orthodontic treatment of traumatized tooth				
Yes	28 (23.9%)	10 (21.3%)	33 (33.3%)	0.186
No	89 (76.1%)	37 (78.8%)	66 (66.6%)	

Note: Chi-square analysis for categorical data; statistical significance set at 0.05.
Bold values indicate statistical significance ($P < 0.05$).
Abbreviations: N, number of participants; n,. number of respondents; % = percentage; SD, standard deviation; ANOVA for continuous variables; 1.

TABLE 5 Knowledge of guidelines for the orthodontic management of patients with a history of dental trauma in participating general dentists, pediatric dentists and orthodontists

	General dentists N = 121	Pediatric dentists N = 47	Orthodontists N = 99	
	n = 119	n = 45	n = 97	*P* value 1
Knowledge of existence of specific guidelines				
Yes	9 (7.6%)	7 (15.6%)	22 (22.7%)	0.007
No	110 (92.4%)	38 (84.5%)	75 (77.3%)	
Guidelines mentioned				
Dental Trauma Guide	3 (2.5%)	0 (0.0%)	3 (3.0%)	-
AAPD	0 (0.0%)	2 (4.5%)	0 (0.0%)	

Note: Chi-square analysis for categorical data; statistical significance set at 0.05.
Abbreviations: AAPD, American Academy of Pediatric Dentistry; N, number of participants; n, number of respondents; %, percentage; 1.

Table 4 presents results regarding the occurrence of complications linked to the orthodontic movement of teeth with a history of trauma. Considerable numbers of the dental practitioners that were questioned in this survey were at least once confronted among their own patients with complications linked to the orthodontic treatment of a traumatized tooth. For orthodontists, this was the case for 66% of respondents. The most frequently reported type of complication, by all practitioners, was resorption (52%) (in most instances without further specification), followed by ankylosis (30.7%) and pulp necrosis with infection (23.6%).

In order to assess the impact of these complications, participants were asked whether these complications eventually led to tooth loss. This question was answered positively by one-third of orthodontists and around one out of five general dentists and pediatric dentists. Progressive resorption, ankylosis and infection complications were mentioned as reasons for tooth loss.

Very few participants knew about the existence of specific guidelines for the orthodontic management of patients with a history of dental trauma (Table 5), 7.6% of general dentists, 15.6% of pediatric dentists and 22.7% of orthodontists ($P = 0.007$). The Dental Trauma Guide was mentioned by three general dentists, none of the pediatric dentists and three orthodontists. Recommendations issued by the American Academy of Pediatric Dentistry (AAPD) were mentioned by two respondents, both pediatric dentists.

4 | DISCUSSION

Pediatric dentists reported a much higher frequency of seeing patients affected by an accident involving dental structures than general practitioners. This is not surprising given the age group of patients they focus on, but also indicates that general dentists have less experience in dealing with a trauma situation. Over one-third of general practitioners reported to be confronted with a young child with dental trauma only once or twice a year. Given the evidence that first-aid measures are highly decisive for the prognosis of a traumatized tooth,[15] critical reflection about the most optimal way of organizing emergency care for dental traumatic injuries is needed.

Over three-quarters of the orthodontists reported that less than 10% of the patients presenting for treatment in their office had a history of dental trauma in the permanent dentition. This matches very well with the answers provided by general dentists, but is lower than the frequency reported by pediatric dentists. Around 40% of the latter estimate this to be the case for between 11% and 20% of their patients. The fact that pediatric dentists report a higher frequency than orthodontists was rather unexpected given that both groups of practitioners focus largely on the same age group of patients. The difference might indicate that children with a dental trauma history seek orthodontic treatment less often, possibly because of hesitation for referring these patients. However, a dental injury can also be the reason for seeking orthodontic treatment.[16] Another explanation could be that the treatment and follow up of a dental trauma is time-consuming and costly[17] and might interfere with the engagement of some patients, especially socially disadvantaged children, in orthodontic treatment.[18] Finally, under registration of dental trauma history by orthodontists is also a possible explanation. It would be interesting to explore this in more detail.

When practitioners were asked to what extent the presence of one or more traumatized teeth influenced the referral behaviour for orthodontic treatment, a wide range of answers was obtained. This indicates the presence of a considerable amount of uncertainty and doubt, in all three groups of professionals, underlining the need for specific information and education. Both general dentists and pediatric dentists experienced rather low to moderate hesitation on behalf of orthodontists for treating patients with traumatized teeth, a situation confirmed by the orthodontists themselves. This is in accordance with findings from the literature stating that orthodontic treatment in patients with traumatized teeth is not contra-indicated, given close monitoring including clinical and radiographic follow up is arranged.[19]

The collection of correct and complete information about a traumatic insult and its consequences is important when an orthodontic treatment plan needs to be developed for these patients.[20] While a large majority of general dentists and pediatric dentists responded

that orthodontists did not or only sometimes asked for information, about 86% of orthodontists stated that they did so almost always. This sharp contrast might indicate that orthodontists do realize and know that it is important but they do not apply it in daily practice. Reasons for this need to be explored in more detail.

Regarding the type of additional information requested by the orthodontist, there was a considerable consensus among general dentists and pediatric dentists. They responded that radiographs were asked for most frequently followed by details about the trauma history and treatment performed, with pediatric dentists consistently reporting higher percentages. The latter might indicate that the exchange of information between pediatric dentists and orthodontists runs smoother, at least regarding dental trauma patients. Remarkably, clinical pictures are shared in only a small number of cases (less than one out of three cases). This is despite the fact that "photographic" documentation of dental trauma cases is recommended and offers useful information on the extent of the injury. This is useful for treatment planning, follow up, insurance compensation, legal claims, or clinical research purposes.[21]

One of the questions explored whether the orthodontic treatment plan was discussed in more detail in case of a patient with dental trauma history. General dentists responded that this was not often the case, while pediatric dentists indicated that this happened sometimes or always. Answers provided by pediatric dentists and orthodontic specialists were highly concordant. Again, this indicates that communication among both these groups of practitioners is more easily established.

During orthodontic treatment, additional checkups need to be scheduled in order to follow up the traumatized teeth closely.[22] This should include careful monitoring of the pulp status and signs of root resorption throughout active tooth movement.[23] Two out of three general dentists plan this sometimes or never, while over 80% of pediatric dentists organize additional review appointments. These results indicate that the follow up of these patients during orthodontic treatment is suboptimal, particularly in general dental practice.

It is also interesting to explore whether orthodontists explicitly ask for additional reviews. Although almost half reported to do so, this was not confirmed by general dentists and pediatric dentists who responded that only five (10%) orthodontists did so. This sharp contrast indicates the fact that orthodontists do realize they should ask for a more close follow up but probably do not do so in their daily practice.

Complications linked to the orthodontic treatment of a traumatized tooth seem not to be a rare finding. While two out of three orthodontists experienced at least one case among their patients, this was the case for one out of three general dentists and two out of five pediatric dentists. The number of cases encountered per practitioner varied between one and 10, with a mean value around three.

One out of three orthodontists has knowledge of a dental trauma patient where tooth loss followed after orthodontic movement of the affected tooth. Among general dentists and pediatric dentists, the percentages were somewhat lower (one out of five). Given the impact of tooth loss at a young age, especially in the esthetic region, and the need for complex solutions and elaborate treatment, it is clear that this situation is highly relevant in clinical practice and needs attention of dental practitioners and researchers.[14]

The finding that only a minority of the participants knew of the existence of specific guidelines for dealing with these clinical situations is remarkable. Orthodontists did so in only one out of five, this while one out of ten of their patients is in this situation. When asked for the source of the guideline, most of the participants referred to the Dental Trauma Guide,[24] which is a remarkable finding since this tool does not contain any recommendation regarding the orthodontic treatment of teeth affected by trauma. Kindelan et al published recommendations to be considered when planning orthodontic tooth movement of traumatized teeth,[12] but none of orthodontists mentioned this guideline. This was also confirmed in the study performed by Tondelli of a group of orthodontists which investigated their knowledge on dental trauma and orthodontic tooth movement.[25] The authors concluded that about 40% of them were not acquainted with the recommendations for orthodontic movement of traumatized teeth, as cited by Kindelan.[12]

Poor knowledge of guidelines is not limited to this specific aspect but can be extended to dental traumatology in general, as previously reported by Alyasi et al[26] and Hartmann et al.[27]

The present survey explored the orthodontic treatment approach by different groups of dental professionals of patients who suffered a dental trauma in their permanent dentition. Although participation levels were acceptable to good, it cannot be excluded that some bias was introduced as the approach of the different groups was organized in slightly different ways. It is also important to mention that the present survey used a convenience sample of practitioners attending various meetings. Further, differences in the distribution of the age groups and years of clinical experience need to be considered. Therefore, the results should be extrapolated with care.

Finally, it is important to underline that the present research does not evaluate the actual practice of the surveyed practitioners but rather their reported knowledge about the topic.

5 | CONCLUSIONS

In the groups of general dentists, pediatric dentists and orthodontists surveyed, there is uncertainty and doubt regarding the orthodontic management of patients with a history of dental trauma especially among general dental practitioners. Further education and training is recommended.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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