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ORIGINAL RESEARCH

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Impact of a child's history of traumatic dental injury on parental knowledge and attitudes toward emergency management

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Abstract

Background: This study aimed to evaluate parental knowledge and attitudes regarding the emergency management of traumatic dental injuries among parents whose children had experienced dental trauma and to determine the influence of previous trauma experience on parental awareness. **Methods**: This descriptive cross-sectional study included 200 parents. Participants were divided into two groups according to whether their children had a history of dental trauma. Parental knowledge and attitudes were assessed using a validated questionnaire. Differences between the groups were analyzed using the Chi-square test, and statistically significant findings were interpreted based on the effect size, as measured by Cramer's V ($p < 0.05$). Multivariable logistic regression was performed to identify independent predictors of selected knowledge-related outcomes. **Results**: Parents of children with a history of trauma demonstrated greater awareness of selected aspects of emergency management for traumatic dental injuries. Significant differences were observed particularly for preserving fractured tooth fragments ($p = 0.016$) and selecting appropriate storage media after trauma ($p = 0.048$). However, the effect sizes for these differences were generally small (Cramer's $V \leq 0.21$). Parental attitude patterns were similar between the groups. After adjustment, previous dental trauma experience remained independently associated with locating fractured tooth fragments and selecting gauze or milk as a storage medium, but it was also associated with the incorrect practice of reinsertion without cleaning. **Conclusions**: A child's experience of dental trauma was associated with a limited increase in parental knowledge regarding emergency management. However, this improvement remained clinically insufficient, and parental awareness was still inadequate. These findings highlight the need for structured and widely accessible educational programs for parents on dental trauma management.

Keywords

Dental trauma; Emergency management; Knowledge; Parents; Pediatric dentistry

1. Introduction

The prevalence and affected age groups of traumatic dental injuries may vary depending on the population studied. However, dental trauma has been reported to affect a substantial proportion of preschool-aged children. Traumatic dental injuries are regarded as a major public oral health concern among preschool- and school-aged children worldwide and may account for a considerable proportion of first dental visits [1, 2]. Recent systematic reviews and meta-analyses published within the last six years have shown that, despite this high prevalence, important global knowledge gaps remain among parents regarding the emergency management of traumatic dental injuries. These reviews have also emphasized methodological inconsistencies in previous knowledge, attitude, and practice studies, particularly regarding study populations, questionnaire content, and outcome reporting [3, 4].

The setting in which trauma occurs varies according to the child's age, with injuries frequently occurring at home. Consequently, parents play a critical role in the initial management process, because appropriate immediate intervention may reduce pulpal and periodontal complication rates [5]. In line with recent methodological recommendations for knowledge, attitude, and practice studies, research should move beyond purely descriptive assessments and examine factors that may influence parental knowledge and attitudes [4, 5].

One of the most critical factors influencing the prognosis of traumatic dental injuries is treatment timing, because the interval between injury and first aid directly affects tooth survival and long-term outcomes [6–8]. Although the first responder may vary according to the location of the injury, parents are often the first people available at the scene [6,

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9]. Therefore, parents must be able to recognize the need for urgent care and initiate appropriate first-aid procedures, regardless of injury severity [9, 10].

Adequate knowledge of the procedures required after dental trauma may positively influence treatment prognosis [7, 9]. For community-based educational programs to be effective, parents' specific informational needs should be considered [3]. Although numerous studies have evaluated parental knowledge regarding dental trauma, the existing literature suggests that direct comparisons between parents of children with and without previous traumatic dental injury experience remain limited [4, 11].

This study, therefore, aimed to evaluate parents' knowledge and attitudes regarding the emergency management of traumatic dental injuries and to determine whether a child's previous history of dental trauma influences these factors.

2. Materials and methods

2.1 Ethical approval and sample size

Ethics committee approval was obtained from the Erciyes University Faculty of Medicine Clinical Research Ethics Committee (2024/05). The sample size was calculated using the Raosoft Web Survey calculator based on the recent global meta-analysis by Tewari *et al*. [3], which evaluated parental knowledge regarding the emergency management of traumatic dental injuries. The key outcome for the calculation was the pooled prevalence of adequate parental knowledge of the emergency management of traumatic dental injuries, reported as 16.4%. Using this prevalence, a 90% confidence level (CI), and a 5% margin of error, the minimum required sample size was calculated as 149 participants. A 90% CI was used only for the initial descriptive sample size calculation because of feasibility considerations within the available clinical recruitment period; however, all hypothesis testing was conducted using a conventional $\alpha = 0.05$ threshold. To improve estimate precision and support between-group comparisons between parents of children with and without previous dental trauma experience, the sample size was increased, and 200 parents were ultimately included. This prevalence-based calculation was used for the descriptive component of the study; for the comparative component, the between-group sample size assessment was based on detecting a medium effect size, as described in the Statistical Analysis section.

The equal allocation of 100 parents per group was not intended to reflect the natural prevalence of traumatic dental injuries in the source population. Instead, it was selected as a balanced comparative design to provide equal-precision estimates and more stable between-group comparisons between parents of children with and without previous dental trauma experience.

2.2 Study population

The study population consisted of parents of children aged 3–15 years who presented to the university's pediatric dentistry department between June 2024 and December 2024. Participants were recruited consecutively from eligible parents who attended the department during the study period and agreed to participate. This age range was selected to include parents of children at risk for traumatic dental injuries involving both primary and permanent dentitions [10]. Inclusion criteria were being the primary caregiver of a child within the specified age range and being able to understand and communicate in Turkish. Exclusion criteria included cognitive impairment, refusal to participate, or incomplete survey responses. Parents were categorized into two groups according to whether their child had a previous history of dental trauma. Written informed consent was obtained from all participants before participation.

2.3 Questionnaire design and validation

The questionnaire was adapted from three previously published instruments evaluating parental knowledge and attitudes regarding dental trauma management [5, 12, 13]. The final instrument consisted of 16 items organized into three main sections: sociodemographic characteristics (3 items: child sex, parental age, and educational level), parental attitudes toward traumatic dental injuries (4 items), and parental knowledge regarding the emergency management of traumatic dental injuries (9 items). One additional item was used to determine previous dental trauma history for grouping purposes.

The questionnaire was administered in Turkish through face-to-face interviews. The researchers read each item aloud to the parents and recorded their responses accordingly. Because the questionnaire was adapted from three previously published instruments rather than directly translated from a single existing instrument, no formal forward-backward translation procedure was performed. Turkish language validity, wording, clarity, and comprehensibility were evaluated during expert review and pilot testing.

Content validity was evaluated by three pediatric dentistry specialists using Lynn's four-point ordinal scale: 1 = not relevant, 2 = somewhat relevant/requires major revision, 3 = relevant/requires minor revision, and 4 = highly relevant. Ratings of 3 or 4 were classified as relevant, whereas ratings of 1 or 2 were classified as not relevant. The Item-Level Content Validity Index (I-CVI) and Scale-Level Content Validity Index based on the average method (S-CVI/Ave) were calculated. I-CVI values ranged from 0.67 to 1.00, and the S-CVI/Ave was 0.99. Items with lower expert agreement were revised for wording and clarity before pilot testing.

The revised questionnaire was piloted with 20 parents from the target population, corresponding to 10% of the final sample; these parents were excluded from the final analysis. Pilot testing assessed face validity, item clarity, comprehension, and completion time. Internal consistency was evaluated separately for the knowledge and attitude sections. Cronbach's alpha was 0.78 for the knowledge section and 0.68 for the attitude section. The reliability estimate for the attitude section was interpreted cautiously because this section included only four items. Inter-item correlations and corrected item-total correlations were also inspected, and no item was removed on this basis.

2.4 Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS Statistics for Windows, Version 26.0; IBM

Corp., Armonk, NY, USA). Categorical variables were summarized as frequencies and percentages, whereas continuous variables were expressed as means and standard deviations. The Shapiro-Wilk test was used to assess data normality. The chi-square test was applied to compare categorical variables between groups.

Cramer's V was used to estimate effect size for categorical comparisons. Effect size interpretation was based on the minimum degrees of freedom for each contingency table; for comparisons with k = 1, values of 0.10, 0.30, and 0.50 were interpreted as small, medium, and large effects, respectively.

For the between-group comparison, a supplementary power assessment was performed using the final balanced sample size. With 100 participants per group, a two-sided chi-square test at $\alpha = 0.05$ provided 80% power to detect a medium effect size ($w = 0.30$).

Multivariable logistic regression analyses were performed to identify independent predictors of selected knowledge-related outcomes regarding the emergency management of traumatic dental injuries. Previous dental trauma experience was included as the main independent variable, while child sex, parental age group, and parental education level were included as covariates. Adjusted odds ratios (aORs) with 95% CIs were reported. A p-value < 0.05 was considered statistically significant.

3. Results

A total of 212 parents were initially approached during the recruitment period, and 12 questionnaires were excluded because of incomplete responses (eight from Group 1 and four from Group 2). Therefore, 200 parents were included in the final analysis, comprising 100 parents whose children had no history of dental trauma (Group 1) and 100 parents whose children had a history of dental trauma (Group 2). Demographic characteristics of the parents were evaluated in the first section of the questionnaire and are presented in Table 1.

Demographic characteristics of the parents were generally similar between the groups. However, the proportion of male children was higher in Group 2 ($p = 0.010$; Cramer's $V = 0.18$).

Regarding parental attitudes toward traumatic dental injuries, both groups showed broad agreement on the need for immediate intervention and the importance of treatment timing. A significant difference was observed only for the statement that "traumatic dental injuries do not require urgent management", with higher agreement in Group 2 ($p = 0.029$; Cramer's $V = 0.18$) (Table 2).

When knowledge-related items were evaluated, significant between-group differences were found for several critical emergency practices. The proportion of parents who believed that the fractured fragment of a permanent tooth should be located was higher in Group 2 ($p = 0.016$; Cramer's $V = 0.21$). For the item addressing the part of the tooth that should be held and the appropriate cleaning method, Group 2 showed a higher tendency to report reinserting the tooth without any cleaning procedure ($p = 0.025$; Cramer's $V = 0.19$). In addition, agreement with the statement that an avulsed tooth should be stored in gauze or milk if replantation is not possible was more frequent in Group 2 ($p = 0.048$; Cramer's $V = 0.21$) (Table 3).

Although some correct practices were more commonly identified in Group 2, incorrect emergency management practices also remained prevalent among these parents.

In multivariable logistic regression analyses adjusted for child sex, parental age group, and parental education level, previous dental trauma experience remained independently associated with several critical knowledge-related outcomes. Parents of children with a previous history of dental trauma had higher odds of correctly reporting that a fractured permanent tooth fragment should be located (aOR = 2.02; 95% CI: 1.13–3.61; $p = 0.018$). Previous dental trauma experience was also associated with higher odds of selecting gauze or milk as a storage medium when immediate replantation was not possible (aOR = 2.00; 95% CI: 1.06–3.77; $p = 0.031$). However, these parents also had higher odds of reporting the incorrect

TABLE 1. Comparison of demographic characteristics according to parental dental trauma history (n = 200).

Variable	Categories	No trauma (n = 100)	Trauma (n = 100)	p-value	OR	95% CI	Cramer's V
Child's gender							
	Male	24 (24.0%)	41 (41.0%)	0.010*	2.21	1.15–4.03	0.18
	Female	76 (76.0%)	59 (59.0%)	—	—	—	—
Parent age							
	22–30	19 (19.0%)	16 (16.0%)	0.309	—	—	0.09
	30–40	55 (55.0%)	48 (48.0%)	—	—	—	—
	≥40	26 (26.0%)	36 (36.0%)	—	—	—	—
Educational level							
	Primary school	44 (44.0%)	31 (31.0%)	0.138	—	—	0.12
	High school	32 (32.0%)	39 (39.0%)	—	—	—	—
	University/Graduate	24 (24.0%)	30 (30.0%)	—	—	—	—

*OR: odds ratio; CI: confidence interval. Cramer's V: 0.1 = small effect, 0.3 = medium effect, 0.5 = large effect. *Statistically significant ($p < 0.05$).*

TABLE 2. Comparison of parental attitudes toward traumatic dental injuries between groups (n = 200).

Statements	Responses	Group 1 (n = 100)	Group 2 (n = 100)	*p*-value	Cramer's *V*
Traumatic dental injuries are not considered an emergency					
	Agree	20 (20.0%)	26 (26.0%)		
	Disagree	62 (62.0%)	68 (68.0%)	**0.029***	0.18
	Neutral	18 (18.0%)	6 (6.0%)		
Timing of intervention is crucial for healing in traumatic dental injuries					
	Agree	89 (89.0%)	94 (94.0%)		
	Disagree	8 (8.0%)	6 (6.0%)	0.181	0.09
	Neutral	3 (3.0%)	—		
Emergency management of traumatic dental injuries should be included in parental educational programs					
	Agree	84 (84.0%)	89 (89.0%)		
	Disagree	9 (9.0%)	3 (3.0%)	0.201	0.08
	Neutral	7 (7.0%)	8 (8.0%)		
With appropriate training, parents can assist clinicians more effectively in the management of traumatic dental injuries					
	Agree	87 (87.0%)	94 (94.0%)		
	Disagree	4 (4.0%)	4 (4.0%)	0.094	0.11
	Neutral	9 (9.0%)	2 (2.0%)		

*Cramer's V indicates effect size for categorical comparisons (0.1 = small, 0.3 = medium, 0.5 = large). *Statistically significant at $p < 0.05$. Significant p-values are written in bold.*

practice of reinserting an avulsed tooth without cleaning (aOR = 3.46; 95% CI: 1.28–9.36; $p = 0.015$). Parental education level was independently associated with selecting gauze or milk as a storage medium (aOR = 1.73; 95% CI: 1.23–2.43; $p = 0.001$). Child sex and parental age group were not significant predictors in the adjusted models (Fig. 1).

4. Discussion

Dental trauma occurs frequently during childhood and is often associated with preventable behaviors [1]. In the age groups with the highest prevalence, most traumatic dental injuries are reported to occur in home or school settings. Therefore, parental guidance and first-aid responses play a decisive role in the prognosis of traumatic dental injuries in children [14, 15]. The knowledge deficiencies observed in this study are consistent with the global pooled prevalence of 16.4% for adequate parental knowledge reported in a recent meta-analysis [3]. Regionally, studies from the Middle East, including those conducted in Qatar and Jordan, have similarly shown that although parents may recognize the urgency of traumatic dental injuries, their procedural knowledge remains clinically insufficient [5, 16].

Although several studies have evaluated parental knowledge regarding dental trauma, most have assessed parents as a single group [5, 15, 16]. The literature contains few studies directly comparing parental knowledge according to whether children have experienced dental trauma.

Therefore, the present study assessed the contribution of trauma experience to parental knowledge. Overall, the findings suggest that a child's previous dental trauma experience alone may not be sufficient to ensure adequate parental knowledge of emergency management. Parents with prior experience provided somewhat better responses for selected items; however, clinically relevant gaps persisted, particularly in the management of avulsed permanent teeth, including cleaning before replantation and timely intervention. Prior experience was also associated with one incorrect practice: reinserting an avulsed tooth without cleaning. These observations indicate that trauma experience may increase awareness but does not necessarily ensure correct emergency action, underscoring the need for structured and practical parental education.

In this study, the proportion of male children was higher in Group 2. This finding is consistent with previous studies reporting that boys are more likely to sustain dental trauma because of higher levels of physical activity and risk-taking behavior [14, 17, 18]. The absence of differences in parental age and educational level between groups suggests that variation in knowledge may be more attributable to trauma-related learning experiences than to sociodemographic characteristics. Furthermore, although univariable analysis initially suggested a higher prevalence of trauma among male children ($p = 0.010$), the multivariable logistic regression model showed that child sex was not an independent predictor of parental knowledge ($p > 0.05$). This finding underscores the importance of controlling for confounders when identifying factors associated with parental behavior [3].

Although most parents stated that dental trauma requires immediate intervention, the higher agreement with the statement "urgent management is not necessary" in Group 2 is noteworthy. After a trauma experience, the absence of serious complications may lead parents to form inaccurate generalizations. Early intervention in complicated injuries such as

TABLE 3. Comparison of parental knowledge regarding emergency management of traumatic dental injuries between groups (n = 200).

Statements	Responses	Group 1 (n = 100)	Group 2 (n = 100)	*p*-value	Cramer's *V*
1. Where would you seek help first in case of dental trauma?					
	Nearest dental clinic	21 (21.0%)	26 (26.0%)	**0.020***	0.20
	Dental examination unit	24 (24.0%)	8 (8.0%)		
	Dental hospital	15 (15.0%)	21 (21.0%)		
	Faculty of dentistry	40 (40.0%)	45 (45.0%)		
2. Should a fractured segment be preserved in permanent tooth fractures?					
	Yes	36 (36.0%)	53 (53.0%)	**0.016***	0.21
	No	64 (64.0%)	47 (47.0%)		
3. Would you consider replanting an avulsed permanent tooth?					
	Yes	32 (32.0%)	39 (39.0%)	0.301	0.07
	No	68 (68.0%)	61 (61.0%)		
4. How would you hold the avulsed tooth?					
	By the root	19 (19.0%)	10 (10.0%)	0.105	0.12
	By the crown	54 (54.0%)	67 (67.0%)		
	It does not matter	27 (27.0%)	23 (23.0%)		
5. Within what time should an avulsed tooth be replanted?					
	Immediately	60 (60.0%)	69 (69.0%)	0.219	0.09
	Within 1–2 hours	29 (29.0%)	26 (26.0%)		
	The next day	11 (11.0%)	5 (5.0%)		
6. How would you clean the tooth before replanting if soiled?					
	Without cleaning	6 (6.0%)	18 (18.0%)	**0.025***	0.19
	Rinse gently under running water	37 (37.0%)	37 (37.0%)		
	Brush vigorously before replanting	57 (57.0%)	45 (45.0%)		
7. How would you transport the tooth if immediate replantation is not possible?					
	Wrapped in clean tissue	36 (36.0%)	37 (37.0%)	**0.048***	**0.21**
	Gauze	17 (17.0%)	26 (26.0%)		
	Child's saliva	8 (8.0%)	2 (2.0%)		
	Container with tap water	23 (23.0%)	15 (15.0%)		
	Disinfectant solution	8 (8.0%)	4 (4.0%)		
	Fresh milk	8 (8.0%)	16 (16.0%)		
8. Would you replant a primary (baby) tooth?					
	Yes	5 (5.0%)	10 (10.0%)	0.179	0.09
	No	95 (95.0%)	90 (90.0%)		
9. Is tetanus vaccination important after a dental trauma?					
	Yes	63 (63.0%)	56 (56.0%)	0.313	0.07
	No	37 (37.0%)	44 (44.0%)		

*Cramer's V indicates effect size for categorical comparisons (0.1 = small, 0.3 = medium, 0.5 = large). *Statistically significant at $p < 0.05$. Significant p-values are written in bold.*

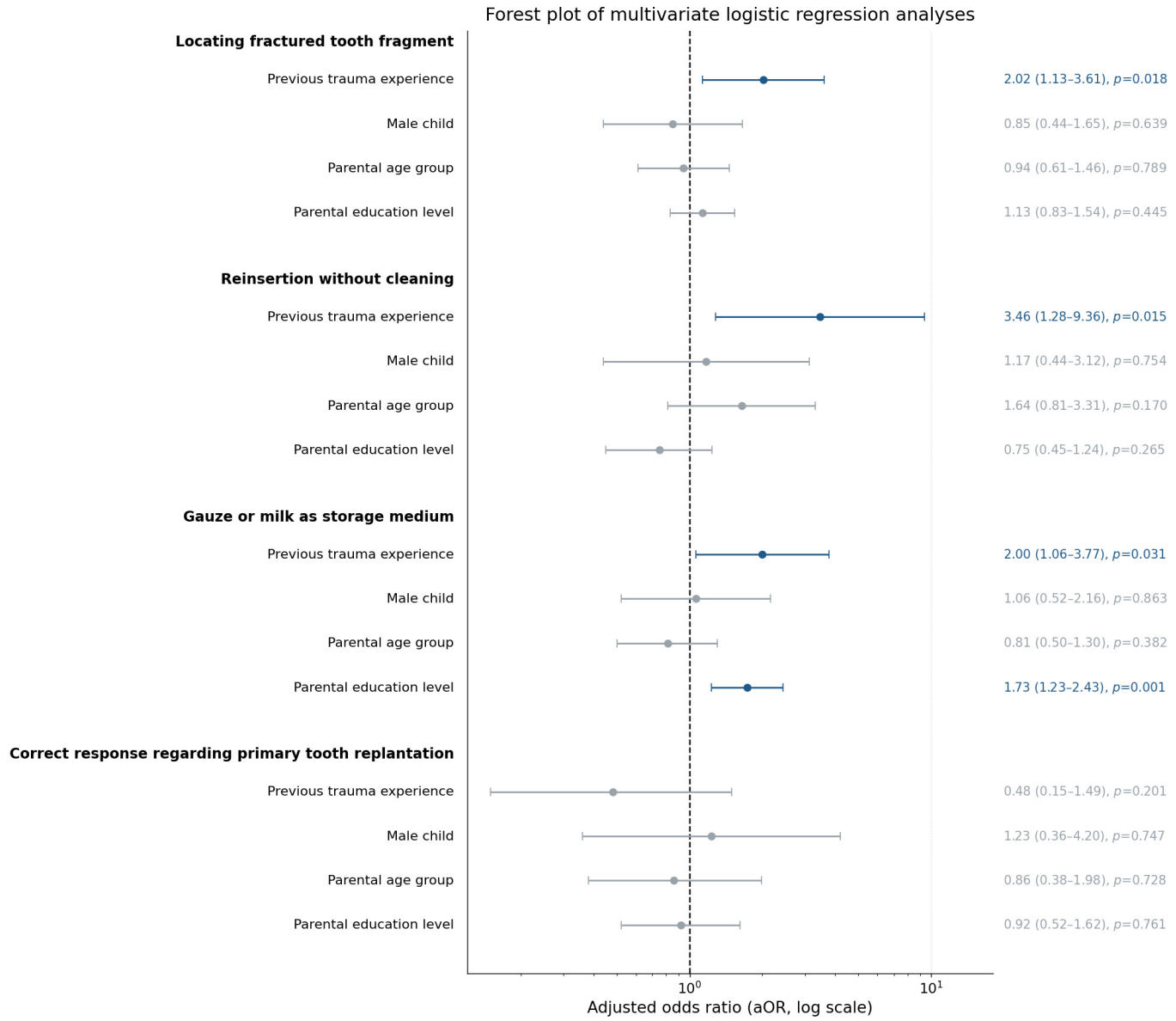


FIGURE 1. Forest plot of adjusted odds ratios for selected knowledge-related outcomes in the multivariate logistic regression analyses. Blue rows indicate statistically significant associations ($p < 0.05$); grey rows indicate non-significant associations. The dashed vertical line indicates no association (aOR = 1.0), and the horizontal lines represent 95% confidence intervals.

avulsion and luxation is known to positively affect prognosis [19, 20]. Al-Asfour and Andersson [21] reported a significant improvement in parents' knowledge following the provision of an educational leaflet on first-aid measures after tooth avulsion.

Although this attitude difference had a small effect size, its clinical relevance should not be overlooked because urgency perception directly influences timely referral and first-aid decision-making after traumatic dental injuries. Therefore, previous trauma experience should not be assumed to provide adequate practical knowledge unless it is supported by professional post-trauma guidance.

In the present study, more than 90% of parents indicated that they could perform more effective emergency management if they received appropriate education. Similarly, Ramos-Jorge *et al.* [15] reported that parents are willing to obtain information about dental trauma, although access to practical and action-oriented guidance remains limited. This finding emphasizes that awareness alone is insufficient and that structured, hands-on educational interventions are needed to improve correct emergency responses [14].

The present findings should also be interpreted within the broader context of treatment-seeking behavior after traumatic dental injuries. Recent studies from different populations have shown that timely presentation after traumatic dental injuries is influenced by several factors, including the day of injury, injury type, perceived severity, parental availability, access to specialized dental services, insurance status, and underestimation of trauma severity, particularly in the primary dentition [22, 23]. Islam *et al.* [24] reported lower presentation rates within 24 hours during weekends, especially on Saturdays and Sundays, than on weekdays, whereas Lembacher *et al.*

[22] identified prolonged transit time, parental unavailability, and underestimation of primary-tooth injuries as major reasons for delayed arrival. Similarly, Bragança-Souza *et al*. [25] found that prompt care-seeking was associated mainly with injury type, particularly luxation and avulsion, while Wang *et al*. [26] reported a more favorable pattern of early presentation in a tertiary hospital cohort. Beyond logistical factors, Alharbi *et al*. [27] and Momeni *et al*. [28] highlighted a knowledge-action gap, showing that parents may recognize the need for care but still delay or fail to seek immediate treatment because of perceived severity, cost, or the belief that dental trauma is not life-threatening. In line with the aforementioned studies, Šimunović *et al*. [29] showed that treatment-seeking behavior is closely related to referral pathways, treatment priority, clinic availability, and patient age. Collectively, these findings indicate that parental knowledge is important not only for performing correct emergency procedures, but also for recognizing urgency, selecting appropriate referral pathways, and seeking timely professional care. Therefore, educational interventions should provide repeated, practical, and action-oriented guidance rather than relying solely on general awareness.

Regarding the choice of healthcare facilities after dental trauma, a higher proportion of parents in Group 2 preferred to seek emergency care at a dental faculty or the nearest dentist. This suggests that previous trauma experience may increase the likelihood of seeking professional assistance. However, the continued selection of broad terms, such as “dental hospital” or “clinic”, by parents in both groups indicates a persistent lack of clarity regarding the most appropriate referral centers for dental emergencies. Similarly, Ramos-Jorge *et al*. [15] reported that although parents may be aware of dental trauma, they often remain uncertain about where to seek emergency care. Therefore, educational interventions should address not only emergency procedures, but also appropriate referral pathways.

With respect to knowledge, certain correct practices were more common in Group 2. For example, the ability to correctly identify that a fractured fragment should be preserved in cases of crown fracture was significantly higher among these parents (p = 0.016). In the adjusted model, parents with previous trauma experience had 2.02-fold higher odds (95% CI: 1.13–3.61; p = 0.018) of correctly reporting this practice. However, the tendency to replant an avulsed tooth without cleaning was also more frequent in Group 2 and is clinically important. These parents had 3.46-fold higher odds (95% CI: 1.28–9.36; p = 0.015) of reporting this incorrect practice. This paradox suggests that personal experience, if not guided by professional instruction, may inadvertently reinforce informal practices or misconceptions rather than evidence-based protocols [3, 5]. Similarly, although Group 2 more frequently selected options such as milk or gauze for transporting an avulsed tooth (aOR = 2.00; 95% CI: 1.06–3.77; p = 0.031), the relatively low rate of selecting milk as the ideal medium suggests that important knowledge gaps persist. The multivariable analysis also identified parental education level as the primary independent predictor of selecting appropriate storage media (aOR = 1.73; 95% CI: 1.23–2.43; p = 0.001), consistent with findings showing that educational attainment is associated with higher health literacy [16]. The clinical importance of these findings lies in the nature of the affected emergency steps rather than in the magnitude of the effect sizes. Fragment preservation may influence restorative treatment options after crown fracture, while cleaning before replantation and appropriate storage-medium selection are directly related to the prognosis of avulsed permanent teeth. Thus, these findings identify specific procedural gaps that remain clinically relevant and should be addressed in structured parental education.

The high rate of correct responses regarding the contraindication of replanting avulsed primary teeth is a positive finding. Replantation of a primary tooth is not recommended, because it may alter the eruption path of the permanent successor and lead to further complications. Previous studies have similarly emphasized that replantation should not be performed in primary teeth and that parents may still lack sufficient awareness of this issue in real clinical situations [13, 30].

This study indicates that parental knowledge regarding the emergency management of dental trauma is influenced not only by previous trauma experience, but also by education provided by dental professionals. Information delivered during clinical procedures may improve treatment outcomes and positively shape parents’ responses to future traumatic incidents involving their children [31]. Future studies should therefore distinguish between trauma experience alone and trauma experience accompanied by professional post-trauma guidance to determine whether clinician-delivered education has a greater impact on parental knowledge than the traumatic event itself.

Previous research has demonstrated that several educational strategies, including short seminars, school-based family information sessions, brochures, videos, and mobile application-assisted programs, can enhance parental knowledge [32, 33]. Future training should therefore include concise and practical programs that reinforce correct emergency responses [30].

This study has certain limitations. First, this was a single-center study conducted at a university clinic, and the use of consecutive sampling among parents attending this department may have introduced selection bias and limited the generalizability of the findings to the broader population. Second, parental knowledge was assessed using a self-reported questionnaire, which may be subject to recall bias, particularly among parents whose children experienced dental trauma a long time ago. Third, children’s exact ages were not recorded as a separate analytical variable. The inclusion criterion of 3–15 years was selected to cover traumatic dental injuries involving both primary and permanent dentitions; however, age-related differences in parental experience, recall, and perceived urgency could not be adjusted for in the regression model. This is particularly relevant because parents of preschool-aged children and adolescents may differ in previous trauma experience, perceived urgency, and emergency decision-making.

Fourth, the balanced group allocation was sufficient to detect medium-sized between-group differences, but the study may have been underpowered to detect smaller effects. Therefore, the inferential findings should be interpreted cautiously and considered exploratory.

Finally, the questionnaire underwent expert-panel content validation and pilot testing. Nevertheless, the pilot sample was relatively limited and was used primarily to assess face valid-

ity, item clarity, comprehension, and completion time rather than to perform extensive psychometric validation. Further studies with larger and more diverse samples may provide additional evidence regarding the psychometric properties of the instrument.

5. Conclusions

Previous trauma experience was associated with partial improvement in selected domains of parental knowledge; however, correct emergency responses remained insufficient, and some parents still underestimated the urgency of traumatic dental injuries. These findings indicate that educational strategies for parents should move beyond general awareness and focus on accurate practical skills, urgency perception, and appropriate attitudes toward emergency dental trauma management. The high willingness of parents to receive further education also supports the feasibility of structured training programs targeting both knowledge and attitudes.

AVAILABILITY OF DATA AND MATERIALS

The datasets generated and/or analyzed during the current study are not publicly available due to ethical and privacy restrictions related to participant data. However, they are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTIONS

İC, ÖAE and EK—study conception and design; acquisition of data; critical revision of the manuscript. İC and ÖAE—analysis and interpretation of data. İC—drafting of the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for the study was obtained from the Erciyes University Clinical Research Ethics Committee (2024/05). Written informed consent was obtained from all participants before participation.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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