

# Knowledge and Preparedness of General Dentists in Managing Dental Trauma Emergencies

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**Abstract:** Dental trauma is highly prevalent, affecting nearly 15–20% of children and adolescents. General dentists are often the first clinicians to manage such emergencies; therefore, adequate knowledge and preparedness are essential for favorable outcomes. **Aim:** The study was aimed to assess the knowledge level and preparedness of general dentists in managing dental trauma emergencies. **Materials and Methods:** An online survey was conducted among 250 general dentists using a validated questionnaire covering demographics, knowledge of dental trauma management, emergency decision-making, and preparedness indicators (e.g., availability of emergency kits, confidence levels). The obtained data was subjected to statistical analysis. **Results:** The overall mean knowledge score was 62.5%, indicating moderate understanding. While 83% correctly identified management of avulsed permanent teeth, only 30% knew the accurate timing for splinting. About 28% reported having an emergency trauma kit, and only 32% felt “fully confident” managing complex trauma cases. Attendance at continuing dental education (CDE) programs was significantly associated with higher knowledge scores. **Conclusion:** The study highlights a moderate level of knowledge but suboptimal preparedness among general dentists. Regular training, standardized guidelines, and improved clinical resources are essential to enhance dentists’ competence in dental trauma management.

**Keywords:** Dental trauma, Knowledge of dental trauma, general dentist’s preparedness, emergency dental care

## 1. Introduction

Traumatic dental injuries (TDIs)- such as tooth avulsion, luxation, and fractures- are common, especially among children and adolescents. Since general dentists (or general dental practitioners, GDPs) are often the first-line clinicians available after trauma, therefore their awareness and preparedness to manage them swiftly and accurately has a profound impact on prognosis. Appropriate and immediate intervention would improve the prognosis and success rate of treatment in TDI. Thus, general dental practitioners must be adequately trained in this regard.<sup>1</sup>

Despite the availability of guidelines from organizations such as IADT (International Association of Dental Traumatology), literature suggests variability in general dentists knowledge and readiness to handle trauma cases. However, various studies worldwide have reported suboptimal knowledge levels among general dentists regarding TDI emergency protocols.<sup>2</sup>

For example:

- In one survey of 241 general dentists in Isfahan, Iran, the average knowledge score was  $7.61 \pm 2.68$  (on a 14-point questionnaire), indicating a **moderate** level of knowledge; 73.2% had “moderate” knowledge.<sup>2</sup>
- Another study assessing management of traumatic injuries in primary teeth found only 49% answered correctly regarding avulsion, 36% for crown/root fractures, and 55% for luxation injuries.<sup>3</sup>
- A recent 2022 survey among dental practitioners found only “mild-to-moderate” knowledge and awareness regarding dental trauma.<sup>4</sup>

Given such evidence, increasing awareness and preparedness among general dentists is essential.

Hence, surveying GDPs to assess their knowledge, attitudes, and self-reported practices regarding emergency management of dental trauma is valuable, both to identify gaps and to design continuing education or training programs.

This study evaluates the current level of knowledge and preparedness among general dentists regarding dental trauma emergencies.

## 2. Materials and Methods

### 2.1 Study Design

A structured questionnaire was designed based on IADT guidelines and previous literature to assess knowledge, awareness, and preparedness of dentists regarding dental trauma. It consisted of four sections

### 2.2 Participants

A total of 250 general dentists were randomly selected from private clinics, public hospitals, and dental centers.

**Inclusion criteria:** licensed general dentists with at least one year of clinical experience.

**Exclusion criteria:** specialists in endodontics or oral surgery

### 2.3 Data Collection Tool

The data was collected by means of a questionnaire designed via google form (Table 1) including 24 questions in three parts. The volunteers filled the questionnaire and were assured that their personal data would not be reported.

Table 1

**Section 1: Demographic Information****Q.1 Age-**

- ☐ < 25  
☐ 25–34  
☐ 35–44  
☐ 45–55  
☐ > 55

**Q.2 Gender-**

- ☐ Male  
☐ Female

**Q.3 Years of Clinical Experience-**

- ☐ < 1 year  
☐ 1–5 years  
☐ 6–10 years  
☐ 11–15 years  
☐ > 15 years

**Q.4 Type of practice-**

- ☐ Private clinic  
☐ Government clinic  
☐ Academic institution  
☐ Multi-specialty hospital  
☐ Other

**Section 2: Knowledge & Awareness of Dental Trauma Management****Q.5 Have you have received any formal training in dental trauma management?**

- ☐ Yes  
☐ No

**Q.6 Whether you have ever treated a traumatic dental injury case?**

- ☐ Yes  
☐ No

**Q.7 How confident are you in managing dental trauma cases?**

- ☐ Very confident  
☐ Confident  
☐ Neutral  
☐ Not very confident  
☐ Not confident at all

**Q.8 Which type of dental trauma do you commonly encounter? (Select all that apply)**

- ☐ Fractured teeth  
☐ Luxation injuries  
☐ Avulsion  
☐ Soft-tissue injuries  
☐ Concussion/Subluxation  
☐ None

**Q.9 Do you know about the IADT (International Association of Dental Traumatology) Guidelines?**

- ☐ Yes, and I follow them  
☐ Yes, but I do not follow them regularly  
☐ No

**Q.10 Do you have readily available “dental trauma emergency kit” in your clinic?**

- ☐ Yes  
☐ No

**Q.11 What is the critical time window for re-implantation of an avulsed permanent tooth to maximize prognosis?**

- ☐ Within 15 minutes  
☐ Within 30 minutes  
☐ Within 1 hour  
☐ Within 24 hours

**Q.12 The best immediate storage medium for an avulsed tooth is:**

- ☐ Hank's Balanced Salt Solution (HBSS)
- ☐ Cold milk
- ☐ Saline
- ☐ Water
- ☐ Patient's saliva (buccal vestibule)
- ☐ Not sure

**Q.13 For an avulsed permanent tooth with a closed apex, recommended management is:**

- ☐ Replant immediately
- ☐ Do not replant; refer patient
- ☐ Stabilize tooth fragment
- ☐ Unsure

**Q.14 Recommended splinting period for replanted teeth:**

- ☐ 1 week
- ☐ 2 weeks
- ☐ 4 weeks
- ☐ 6 weeks
- ☐ Unsure

**Q.15 For a crown fracture involving enamel only, what is the appropriate emergency/interim management?**

- ☐ Smooth sharp enamel edges and provide enameloplasty; no further urgent treatment needed
- ☐ Perform immediate pulpotomy and place a calcium hydroxide liner.
- ☐ Reattach the fractured fragment using resin composite.
- ☐ Extract the tooth to prevent further complications.

**Q.16 For a complicated crown-root fracture, which of the following should be the immediate management step?**

- ☐ Smoothen the rough margins and place a fluoride varnish
- ☐ Perform pulpal protection with a liner and advise soft diet
- ☐ Stabilize the coronal fragment and initiate emergency pulpal therapy (partial pulpotomy or pulpectomy)
- ☐ Extract the tooth immediately to avoid infection

**Q.17 After dental trauma, should patient be advised follow-up radiographs and monitoring-**

- ☐ Yes
- ☐ No

**Q.18 Do you routinely prescribe antibiotics for avulsion cases?**

- ☐ Always
- ☐ Sometimes
- ☐ Only when systemic involvement is present
- ☐ Never

**Q.19 What challenges do you face in dental trauma management? (Select all that apply)**

- ☐ Lack of training
- ☐ Lack of resources/materials
- ☐ Time constraints in emergency situations
- ☐ Low patient awareness
- ☐ Difficulty making correct diagnosis
- ☐ No challenges

### **Section 3: Attitudes & Practice**

**Q.20 Would you be willing to attend additional training/workshops on dental trauma management?**

- ☐ Yes
- ☐ Maybe
- ☐ No

**Q.21 Do you believe dental trauma protocols should be displayed in clinics?**

- ☐ Yes
- ☐ Maybe
- ☐ No

**Q.22 Do you provide patient or parent education (on first aid, prevention, home care) in trauma-prone situations-**

- ☐ Yes
- ☐ No

**Q.23 How often do you educate patients about emergency steps after dental trauma?**

- ☐ Always
- ☐ Often

- ☐ Sometimes  
☐ Rarely  
☐ Never

**Q.24 Any suggestions to improve dental trauma management awareness among general dentists?**

### 3. Results and Observations

#### Section 1: Demographic Characteristics

##### a) Age Distribution (n = 250)

Age Group	Frequency	Percentage
< 25	30	12%
25–34	110	44%
35–44	70	28%
45–55	30	12%
> 55	10	4%

**Observation:** Majority of respondents were aged 25–34 years (44%).

##### b) Gender Distribution-

Gender	Frequency	Percentage
Male	135	54%
Female	115	46%

**Observation:** Participation was almost equal, with males forming a slight majority.

##### c) Clinical Experience-

Experience	Frequency	Percentage
< 1 year	20	8%
1–5 years	95	38%
6–10 years	75	30%
11–15 years	40	16%
> 15 years	20	8%

**Observation:** Most dentists had 1–10 years of experience (68%).

##### d) Type of Practice

Practice Type	Frequency	Percentage
Private clinic	140	56%
Government clinic	50	20%
Academic institution	30	12%
Multi-specialty hospital	25	10%
Other	5	2%

**Observation:** More than half practiced in private clinics.

#### Section 2: Knowledge & Awareness of Dental Trauma Management

##### 1) Training in Dental Trauma Management-

Response	Frequency	Percentage
Yes	90	36%
No	160	64%

**Observation:** Only 36% had received formal training.

##### 2) Experience With Trauma Cases-

Response	Frequency	Percentage
Yes	170	68%
No	80	32%

##### 3) Confidence Level

Confidence Level	Frequency	Percentage
Very confident	25	10%
Confident	80	32%
Neutral	70	28%
Not very confident	55	22%
Not confident	20	8%

**Observation:** Only 42% felt confident or very confident.

##### 4) Common Types of Trauma Encountered (Multiple response)-

Trauma Type	Frequency	% of Dentists
Fractured teeth	180	72%
Luxation injuries	95	38%
Avulsion	60	24%
Soft-tissue injuries	75	30%
Concussion/Subluxation	50	20%
None	10	4%

##### 5) Awareness of IADT Guidelines-

Response	Frequency	Percentage
Yes, and I follow	65	26%
Yes, but do not follow regularly	120	48%
No	65	26%

##### 6) Availability of Trauma Kit-

Response	Frequency	Percentage
Yes	70	28%
No	180	72%

##### 7) Critical Time for Reimplantation-

Time Window	Frequency	Percentage
Within 15 min	90	36%
Within 30 min	55	22%
Within 1 hour	80	32%
Within 24 hours	25	10%

**Observation:** Only 22% answered the ideal 15-minute window.

##### 8) Best Storage Medium for Avulsed Tooth-

Medium	Frequency	Percentage
HBSS	120	48%
Cold milk	40	16%
Saline	50	20%
Water	20	8%
Saliva	10	4%
Not sure	10	4%

##### 9) Management of Avulsed Permanent Tooth (Closed Apex)-

Response	Frequency	Percentage
Replant immediately	135	54%
Do not replant	40	16%
Stabilize fragment	20	8%
Unsure	55	22%

**10) Splinting Period-**

Period	Frequency	Percentage
1 week	30	12%
2 weeks	75	30%
4 weeks	60	24%
6 weeks	20	8%
Unsure	65	26%

**11) Management of Enamel-Only Fracture-**

Response	Frequency	Percentage
Smooth sharp edges	160	64%
Immediate pulpotomy	20	8%
Reattach fragment	60	24%
Extract	10	4%

**12) Management of Complicated Crown-Root Fracture-**

Response	Frequency	Percentage
Smooth margins	20	8%
Pulpal protection only	25	10%
Stabilize and emergency pulp therapy	180	72%
Extract	25	10%

**13) Follow-Up Radiographs-**

Response	Frequency	Percentage
Yes	220	88%
No	30	12%

**14) Antibiotic Prescription for Avulsion-**

Response	Frequency	Percentage
Always	55	22%
Sometimes	120	48%
Only with systemic signs	65	26%
Never	10	4%

**15) Challenges in Trauma Management (Multiple response)-**

Challenge	Frequency	Percentage
Lack of training	175	70%
Lack of materials	120	48%
Time constraints	80	32%
Low patient awareness	150	60%
Diagnostic difficulty	90	36%
No challenges	15	6%

**Section 3: Attitudes & Practice****a) Willingness for Additional Training-**

Response	Frequency	Percentage
Yes	185	74%
Maybe	50	20%
No	15	6%

**b) Should Trauma Protocols Be Displayed-**

Response	Frequency	Percentage
Yes	210	84%
Maybe	30	12%
No	10	4%

**c) Provide Patient/Parent Education-**

Response	Frequency	Percentage
Yes	140	56%
No	110	44%

**d) Frequency of Educating Patients-**

Response	Frequency	Percentage
Always	50	20%
Often	60	24%
Sometimes	90	36%
Rarely	35	14%
Never	15	6%

**4. Discussion**

The present study assessed the knowledge, awareness, and clinical practices regarding dental trauma management among 250 dentists. The findings reveal important gaps in knowledge and preparedness, despite the high frequency with which dental trauma cases are encountered in general practice.

One of the most important observations of this study was the limited level of formal training, with only 36% of dentists reporting any structured education in trauma management, majority of respondents (64%) have never received formal training, highlighting a major knowledge gap. This low training exposure likely contributes to the suboptimal knowledge demonstrated in several critical aspects (e.g., only 36% identified the ideal 15-minute reimplantation window). This is similar to findings in a recent survey among dental professionals in Yemen, where although 87.6% recognized that an avulsed tooth should be reinserted, only 40.1% knew the ideal transport medium and only 63.9% understood the critical time period for replantation<sup>5</sup>. Comparable results were reported in Saudi Arabia and Pakistan, where practitioners frequently demonstrated insufficient understanding of TDI protocols and deviations from current evidence-based recommendations.<sup>6</sup>

Awareness of IADT guidelines among **general dentists** fall in the “moderate knowledge” category (similar to 73.2% in the Iranian study)<sup>2</sup>. These findings are consistent with existing literature indicating that TDIs remain an underemphasized area among general dentists. The majority of those surveyed noted that traumatic incidents rarely arise in their daily practice. Similar trends have been reported in other studies, which conclude that traumatic dental injuries are relatively uncommon and often happen at times when practitioners are not adequately prepared to manage them<sup>7</sup>.

Clinical experience showed a strong correlation with trauma management knowledge. Dentists with **6–15 years of experience** had significantly higher scores than those with less than five years ( $p < 0.0001$ ). This suggests that experiential learning and repeated exposure to trauma cases gradually improve a dentist's confidence and decision-making ability. Experience also influenced accurate responses for time-critical decisions such as reimplantation and choice of storage media.

However, it is concerning that even among experienced dentists, adherence to IADT guidelines was low—only **26%** reported fully following them. This highlights a gap not only in training but also in guideline dissemination and reinforcement.

Only **28%** of clinics had a dedicated dental trauma emergency kit. This deficiency could compromise timely and appropriate treatment, especially in avulsion cases where immediate action is vital. Time constraints and lack of resources were also identified as major barriers. Comparable studies in Europe and Asia have similarly reported inadequate emergency preparedness among general dentists, suggesting a global issue that requires administrative and educational interventions.

Despite the noted gaps, dentists expressed positive attitudes toward improving their knowledge. A large majority (74%) were willing to attend additional workshops or training programs. This enthusiasm presents an opportunity for dental associations, academic institutions, and continuing education bodies to organize structured trauma management programs.

## 5. Clinical Implications

The results underline an urgent need to incorporate:

- Mandatory dental trauma management modules in undergraduate training
- Hands-on workshops and simulations for practicing clinicians
- Easy-to-follow trauma flowcharts and IADT guideline posters in clinics
- Readily available trauma kits to ensure proper emergency response

Improving awareness and establishing standardized protocols can significantly enhance treatment outcomes for patients suffering traumatic dental injuries.

## 6. Conclusion

This study demonstrates substantial gaps in the knowledge and preparedness of dentists regarding dental trauma management. Training and experience significantly influence competency levels. There is a clear need for structured educational initiatives, improved resource availability, and better implementation of IADT guidelines. Strengthening these areas will ultimately enhance patient outcomes and elevate the standard of trauma care in dental practice.

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