

PREVALENCE AND PATTERN OF TRAUMATIC DENTAL INJURY AMONG PATIENTS VISITING A TERTIARY CARE CENTER: A CROSS-SECTIONAL STUDY

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**ABSTRACT****Introduction:** Dental trauma is a common dental public health problem worldwide. It has a physical as well as a psychological effect. Despite this concern, data regarding its prevalence is insufficient in the literature of Nepal and specifically for this particular region of Nepal. Hence, the aim of this study is to investigate the prevalence and pattern of traumatic dental injuries for the patients visiting the Dental campus of National Medical College, Birgunj, Nepal.**Materials and methods:** A cross-sectional study was conducted and ethical clearance was taken from institutional review committee of National Medical College. After obtaining the written consent from patient or guardian; history was taken and clinical examination was done under dental operating light. The following information was collected for each patient's gender, age at the time of injury, Day and month of trauma, cause of injury, and type of dental injury. Qualitative data was presented as frequencies and percentages.**Results:** Out of 400 patients registered during the study period, 59 patients (14.8%) were due to traumatic dental injury. Most frequently, injuries occurred in June (33.9%). Road traffic accidents (32.2 %) were the most common mode, and complicated crown-root fracture (22%) was the most common type of traumatic dental injury.**Conclusion:** The prevalence of 14.8 % of traumatic dental injury indicates that dental trauma needs special attention. Policy and guidelines need to be formulated and implemented by the responsible authorities to prevent and manage it.**Keywords:** Pattern, Prevalence, Traumatic Dental Injury**INTRODUCTION**

Dental trauma is a major health problem in many societies, with higher prevalence rates among children and adolescents.^{1,2} Dental trauma (Traumatic Dental Injury) is an impact injury to the teeth and/or other hard and soft tissues within and around the locality of the mouth and oral cavity. Traumatic Dental Injury (TDI) is an injury inflicted to the dentoalveolar system. It is usually sudden, circumstantial, unexpected, and accidental and often requires emergency attention.³ As the oral cavity is the sixth most frequently injured part of the body, it shows a high impact on the quality of life. They cause physical and psychological concerns leading to undesirable socialization consequences.⁴⁻⁶ While diseases such as dental caries and periodontal disease have been given due importance and are still considered to be the most significant oral health problems worldwide, traumatic

dental injury with the underlying aesthetic, psychosocial, functional, and therapeutic problems undesirably affect an individual's quality of life.⁷ Different studies about Traumatic Dental Injury demonstrate a prevalence that ranges from 3.9% to 58.6%.⁶ The incidence of dental trauma has increased during the last 10-20 years and it has been advised that it will soon exceed that of dental caries and periodontal disease.⁸ Traumatic force to the teeth or periodontium can cause destruction in a variety of directions and of a variety of magnitudes.⁹

For the prevention of traumatic dental injuries (TDIs) and their lifelong consequences; recommendations shall be provided for prevention and improvement on quality of life (QoL). For minimizing its sequelae, it would be useful to investigate the prevalence and pattern of TDIs.^{10,11}

Despite its high prevalence and negative impacts, there is a lack of literature about traumatic dental injury in this particular area of Madhesh province, Nepal. Hence, the aim of this study is to investigate the prevalence and Pattern of TDIs among patients visiting to Department Conservative Dentistry and Endodontics of National Medical College Teaching Hospital, Birgunj.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at National Medical College and Teaching Hospital in Parsa, Birgunj from April 6, 2024 to August 31, 2024. Data collection was done after obtaining ethical approval from the Institutional Review Committee (Ref. F-NMC/692/080-081). All Patients aged over 18 years visiting the dental OPD of National Medical College and Teaching Hospital, who had provided written informed consent were enrolled in the study using a convenience sampling technique. A patient with critical illness and mental disability were excluded.

This study considered 95% power and 95% confidence interval. The sample size of the study was calculated using standard formula given below.

$$\text{Sample } (n) = Z^2 (pq) / e^2$$

Where, $z = 1.96$; $p = 50\%$ (for maximum sample size); $q = 1-p$ and $e = 5\%$ absolute error

The calculated sample size was 384. However, 400 patients were enrolled in this study.

Patient's history was taken and clinical examination was done with the help mouth mirror and dental explorer under dental operating light. The following information was collected for each patient's gender, age at the time of injury, day and month of trauma, cause of injury, and type of dental injury. Past history of dental trauma was also documented. The causes of TDI were classified into six categories as 1) Fall, 2) Road traffic accidents, 3) Sports activities, 4) Collisions, 5) Physical assaults 6) Others. The type of TDIs was recorded, according to the system described by Andreasen and Andreasen⁷ as 1) Crown infraction 2) Uncomplicated crown fracture 3) Complicated crown fracture 4) Uncomplicated crown-root fracture 5) Complicated crown-root fracture 6) Root fracture 7) Concussion 8) Subluxation 9) Lateral luxation 10) Extrusive luxation 11) Intrusive luxation 12) Exarticulation (avulsion).

The data was entered in Microsoft Excel. The statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 16 software program (SPSS Inc., Chicago, IL, USA). Qualitative data was presented as frequencies and percentages.

RESULTS

Minimum age of study participant was 18 whereas maximum age was 73 with mean age of 41.71 years.

Out of 400 patients, majority of patients were female 234 (58.5%) and male patients were 166 (41.5%). Overall, 59 (14.8%) patients presented with traumatic dental injuries. (Table 1).

Table 1: Demographic Statistics and Prevalence of Traumatic Dental injuries

		Frequency	Percent
Gender	Female	234	58.5
	Male	166	41.5
Dental Trauma	Yes	59	14.8
	No	341	85.2

Considering the month, Maximum number of traumatic dental injuries occurred in the month of June 20 (33.9%) followed by month of July 8 (13.6%) (Table 2)

Table 2: Distribution of TDI according to month

Month of Injury	Frequency	Percent
January	3	5.1
February	2	3.4
March	5	8.5
April	5	8.5
May	4	6.8
June	20	33.9
July	8	13.6
August	4	6.8
September	2	3.4
October	1	1.7
November	3	5.1
December	2	3.4

Concerning the day of the visit of trauma cases, Tuesday was the day with the highest number 13 (22%) of trauma, followed by Monday 11 (18.6%) (Table 3).

Table 3: Distribution of TDI according to day

Day of Injury	Frequency	Percent
Sunday	5	8.5
Monday	11	18.6
Tuesday	13	22.0
Wednesday	8	13.6
Thursday	7	11.9
Friday	10	16.9
Saturday	5	8.5

The most common causes for traumatic dental injuries were road traffic accidents 19 (32.2%), followed by fall injury 16 (27.1%) and physical assaults 8 (13.6%) (Table 4)

Table 4: Distribution of TDI according to cause of injury

Cause of Injury N=59	Fall	16	27.1
	Road traffic accidents	19	32.2
	Sports activities	7	11.9
	Collisions	3	5.1
	Physical assaults	8	13.6
	Others	6	10.2

The complicated crown fracture was the most common type of TDIs 13 (22%), followed by complicated crown-root fracture 12 (20.3%) (Table 5).

Table 5: Distribution of TDI according to type

Type of Injury N= 59	Crown infraction	5	8.5
	Uncomplicated crown fracture	7	11.9
	Complicated crown fracture	13	22.0
	Uncomplicated crown-root Fracture	3	5.1
	Complicated crown-root fracture	12	20.3
	Root fracture	2	3.4
	Concussion	1	1.7
	Subluxation	4	6.8
	Lateral luxation	2	3.4
	Extrusive luxation	2	3.4
	Intrusive luxation	3	5.1
	Exarticulation (Avulsion)	5	8.5

DISCUSSION

Dental trauma is a significant public health problem because of its frequency, impact on economic productivity and quality of life. It is not a disease and no individual is ever at zero risk of sustaining these potentially life-changing injuries. This study can contribute an insight into the magnitude of different types and causes of traumatic dental injuries in a particular region of Nepal (i.e. Madhesh Province). So, the findings can be helpful to develop preventive guidelines and the adoption of precise remedial judgments with therapeutic protocols.¹²

The prevalence of dental trauma is 14.8% in the present study, whereas prevalence is 7.86% in Nepal¹³, 4.15% in India¹⁴, 27.7% in the United Kingdom, 11% in Greece, and 8.4% in France.¹⁵ The difference in prevalence might be due to socioeconomic, behavioral, cultural diversities, and geographical variations of the study's locations.

In this present study traumatic dental injuries classification was recorded based on Andreasen and Andreasen's criteria, which is similar to the studies done previously.^{11,13,15}

This classification is based on anatomic, therapeutic, and prognostic considerations which better predicts the severity and state of TDI.¹²

The maximum number of cases occurred in the month of

June (33.9%), which was similar to study done by Subham et al¹³ and contrasts with the study done by Guedes OA et al.¹² which showed maximum TDIs in the month of July-September. More cases of TDI in June in the present study might be due to the slippery road in monsoon season; moreover, Nepal's roads are in poor condition in the rainy season.

The weekly distribution showed that the major prevalence of TDIs were on Tuesdays, followed by Mondays and Fridays. This is associated with intense social activity, sports and leisure time as well as greater alcohol consumption on the weekends. These findings agree with some extent to former studies.^{16,17,18}

Most of TDIs was due to a road traffic accident (32.2%) because Nepal is a developing country with dangerous landscapes and poor road conditions, neglect of traffic rules and substandard design of crossroads and speed breakers.

The most common dental trauma in our study was complicated crown fracture (22 %). In contrast, a study conducted by Subham et al¹³ which showed complicated crown-root fracture (23.3%) to be most prevalent. Shrestha et al.¹¹ and Borin-Moura et al.¹⁹ showed an uncomplicated crown fracture to be more prevalent, which accounts for 44.4% and 52.6%, respectively.

This study gives an overview of the prevalence of TDIs in a particular region of Nepal (i.e., Madhesh Province). This study can contribute to some extent to an idea of the epidemiology of the TDIs even though it is a hospital-based study. The outcomes can help to develop preventive guidelines and the acceptance of precise remedial decisions with therapeutic protocols.

Although this study gives an insight into the opinions and attitudes of the respondents, it has some limitations such as its cross-sectional nature and chances of a response bias. Hence, a multicentric, nation-wide survey is required to understand better the degree of severity, which could be helpful for policy formulation.

CONCLUSIONS

Dental trauma is not a disease but rather an unfortunate impact injury to the teeth and mouth that can arise from any activity of daily living. The prevalence of 14.8 % of traumatic dental injury indicates that dental trauma needs special attention. Policy and guidelines need to be formulated and implemented by the responsible authorities to prevent and manage it. Transport vehicles and road conditions should be monitored on regular basis because it is directly accountable for road traffic accident occurrence.

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