

**Incidence of Traumatic Dental Injuries in Primary
Dentition among a Group of Preschool Egyptian
Children attending Pediatric Dentistry Department
Cairo University: Cross Sectional Study**

Thesis

Submitted to the Faculty of Dentistry, Cairo University,
In Partial Fulfillment of Requirements for the Master Degree in pediatric dentistry.

By

Samaa Salah Eldin Abd Elfattah

B.D.Sc. Faculty of Dentistry

Cairo University

2011

Resident in Pediatric Dentistry and Dental Public Health Department

Faculty of Dentistry

Cairo University

2017

Supervisors

Dr. Adel Abdelazim

Associate Professor of Pediatric Dentistry and Dental Public Health,

Faculty of Dentistry

Cairo University

Dr. Randa Youssef

Associate Professor of Pediatric Dentistry and Dental Public Health,

Faculty of Dentistry

Cairo University

Dr. Nada Wassef

Lecturer of Pediatric Dentistry and Dental Public Health,

Faculty of Dentistry

Cairo University

Acknowledgment

I would like to express my utmost gratitude to Dr. Adel El-Bardissy, Associate Professor of Pediatric Dentistry, Faculty of Dentistry, Cairo University for his kind supervision, valuable guidance, constructive and fruitful criticism that were of great value throughout the present work.

I would like also to express my special appreciation to Dr. Randa Youssef, Associate Professor of Pediatric Dentistry, Faculty of Dentistry, Cairo University for her generous support, supervision, continuous concern, patience and valuable advices.

I'm heartly thankful to Dr. Nada Wassef, Lecturer of Pediatric Dentistry, Faculty of Dentistry, Cairo University for her kind supervision, encouragement, and sincere help.

I would like to extend my thanks to all the staff members of the Pediatric Dentistry and Dental Public Health Department, Faculty of Dentistry, Cairo University for their great help and friendly support throughout the present work.

Many thanks to all children and their parents, who cooperated with me to accomplish this thesis.

Dedication

I dedicate this work to my loving and supportive family:

My mother, the person who makes life worthwhile.

*Thank you for your unconditional love, support,
encouragement and her prayers keep me safe*

*My father, my backbone and whose endless love keeps me
warm*

*My brothers and my sister, who have grown up to be my
role model and my inspiration.*

List of contents

| | |
|-----------------------------|---------------------|
| List of abbreviations | I |
| List of tables..... | II |
| List of figures..... | III |
| List of appendices..... | IV |
| Introduction..... | 1 |
| Review of literature..... | 3 |
| Aim of the study | 32 |
| Subjects and methods | 33 |
| Results | 44 |
| Discussion..... | 76 |
| Summery | 83 |
| Conclusion..... | 86 |
| Recommendations | 87 |
| References | 88 |
| Appendices..... | 102 |
| الملخص العربى..... | ١ |

List of abbreviations

AAPD..... American Academy of Pediatric Dentistry

DTG Dental Trauma Guide

IADT..... International Association for Dental Traumatology

TDIs..... Traumatic Dental Injuries

WHO..... World Health Organization

ADHD..... Attention Deficit Hyperactivity Disorder

List of tables

| Table number | Title | Page number |
|---------------------|---|--------------------|
| 1 | Frequency and percentage of patients according to age distribution. | 46 |
| 2 | Frequency and percentage of patients according to time elapsed between injury and seeking professional treatment | 47 |
| 3 | Frequency and percentage of patients according to place of injury. | 49 |
| 4 | Frequency and percentage of patients according to etiology of injury. | 50 |
| 5 | Frequency and percentage of patients according to medical condition. | 52 |
| 6 | Frequency and percentage of patients according to type of traumatic injuries. | 53 |
| 7 | Frequency and percentage of patients according to the number of the affected teeth. | 55 |
| 8 | Frequency and percentage of the injured teeth according to tooth type. | 56 |
| 9 | Frequency and percentage of teeth with enamel fracture in girls and boys among different age groups. | 58 |
| 10 | Frequency and percentage of teeth with uncomplicated crown fracture in girls and boys among different age groups. | 60 |

| | | |
|-----------|--|-----------|
| 11 | Frequency and percentage of teeth with complicated crown fracture in girls and boys among different age groups. | 62 |
| 12 | Frequency and percentage of teeth with root fracture in girls and boys among different age groups. | 63 |
| 13 | Frequency and percentage of teeth with complicated crown/root fracture in girls and boys among different age groups. | 65 |
| 14 | Frequency and percentage of teeth with subluxation injuries in girls and boys among different age groups. | 67 |
| 15 | Frequency and percentage of teeth with lateral luxation injuries in girls and boys among different age groups. | 68 |
| 16 | Frequency and percentage of teeth with intrusion injuries in girls and boys among different age groups. | 70 |
| 17 | Frequency and percentage of teeth with extrusion injuries in girls and boys among different age groups. | 71 |
| 18 | Frequency and percentage of teeth with avulsion in girls and boys among different age groups. | 73 |
| 19 | Frequency and percentage of teeth with discoloration in girls and boys among different age groups. | 74 |

List of figures

| Figure number | Title | Page number |
|------------------|---|----------------|
| 1 | Summary of the factors that are affecting the occurrence of TDIs in primary dentition. | 14 |
| 2 | Photograph showing diagnostic set used in the study. | 37 |
| 3 | Photograph showing the position in which the young child was examined on parent's lap. | 37 |
| 4 | Photograph showing the dental x-ray unit in the radiology room. | 37 |
| 5 | a: Photograph showing root fracture for primary upper right central incisor (A) and primary upper right lateral (B). b: Periapical radiograph showing root fracture for primary upper right central incisor (A) and primary upper right lateral (B). | 38 |
| 6 | a: Photograph showing crown-root fracture for primary upper left central incisor (A) and enamel and dentin fracture for primary upper right central incisor (A). b: Periapical radiograph showing crown-root fracture for primary upper left central incisor (A) and enamel and dentin fracture for primary upper right central incisor (A). | 38 |
| 7 | a: Photograph showing crown-root fracture for primary upper left central incisor (A). b: Periapical radiograph showing crown-root fracture for primary upper left central incisor (A). | 39 |

| | | |
|-----------|---|-----------|
| 8 | a: Photograph showing crown-root fracture for primary upper left central incisor (A) and enamel and dentin fracture for primary upper right central incisor (A). b: Periapical radiograph showing crown-root fracture for primary upper left central incisor (A) and enamel and dentin fracture for primary upper right central incisor (A). | 39 |
| 9 | a: Photograph showing extrusion for primary lower left canine (C). b: Periapical radiograph showing extrusion for primary lower left canine (C). | 40 |
| 10 | a: Photograph showing intrusion for primary upper left central incisor (A), primary upper right central incisor (A) and primary upper right lateral (B). b: Periapical radiograph showing intrusion for primary upper left central incisor (A), primary upper right central incisor (A) and primary upper right lateral (B). | 40 |
| 11 | a: Photograph showing intrusion for primary upper left lateral (B) and primary upper right canine (C). b: Periapical radiograph showing intrusion for primary upper left lateral (B) and primary upper right canine (C). | 41 |
| 12 | a: Photograph showing intrusion for primary upper right central incisor (A). b: Periapical radiograph showing intrusion for primary upper right central incisor (A). | 41 |
| 13 | a: Photograph showing lateral luxation for primary upper left central incisor (A), primary upper right central incisor (A) and subluxation for primary upper right lateral (B). b: Periapical radiograph showing lateral luxation for primary upper left central incisor (A), primary upper right central incisor (A) and subluxation for primary upper right lateral (B). | 42 |
| 14 | Photograph showing avulsion for primary upper left lateral (B) and clinical photograph for the avulsed tooth. | 42 |

| | | |
|-----------|--|-----------|
| 15 | Photograph showing discolored primary upper left central incisor (A). | 43 |
| 16 | Photograph showing laceration in the soft palate. | 43 |
| 17 | Photograph showing laceration in the tip of the tongue. | 43 |
| 18 | Pie chart showing the incidence of TDIs in children attending the Department of Pediatric Dentistry, Cairo University, during the one year of the study. | 44 |
| 19 | Pie chart showing gender distribution of children with TDIs in their primary teeth. | 45 |
| 20 | Pie chart showing the distribution of patients with TDIs according to age. | 46 |
| 21 | Pie chart showing the distribution of patients according to time elapsed between injury and seeking professional treatment. | 48 |
| 22 | Pie chart showing the distribution of patients according to place of injury. | 49 |
| 23 | Pie chart showing the distribution of patients according to etiology of injury. | 51 |
| 24 | Pie chart showing the distribution of patients according to medical condition. | 52 |
| 25 | Pie chart showing the distribution of patients according to the type of traumatic injuries. | 54 |
| 26 | Pie chart showing the distribution of the number of the affected teeth among patients. | 55 |
| 27 | Pie chart showing the distribution of the injured teeth according to tooth type. | 57 |

| | | |
|-----------|---|-----------|
| 28 | Bar chart showing the distribution of teeth with enamel fracture in girls and boys among different age groups. | 59 |
| 29 | Bar chart showing the distribution of teeth with enamel / dentin fracture in girls and boys among different age groups. | 61 |
| 30 | Bar chart showing the distribution of teeth with enamel / dentin and pulp fractures in girls and boys among different age groups. | 62 |
| 31 | Bar chart showing the distribution of teeth with root fracture in girls and boys among different age groups. | 64 |
| 32 | Bar chart showing the distribution of teeth with complicated crown/root fractures in girls and boys among different age groups. | 65 |
| 33 | Bar chart showing the distribution of teeth with subluxation in girls and boys among different age groups. | 67 |
| 34 | Bar chart showing the distribution of teeth with lateral luxation in girls and boys among different age groups. | 69 |
| 35 | Bar chart showing the distribution of teeth with intrusion in girls and boys among different age groups. | 70 |
| 36 | Bar chart showing the distribution of teeth with extrusion in girls and boys among different age groups. | 72 |
| 37 | Bar chart showing the distribution of teeth with avulsion in girls and boys among different age groups. | 73 |
| 38 | Bar chart showing the distribution of teeth with discoloration in girls and boys among different age groups. | 75 |

List of appendices

| Appendix number | Title | Page number |
|----------------------------|--|------------------------|
| I | The Ethical Committee approval | 102 |
| II | The questionnaire and clinical examination chart | 103 |
| III | The informed consent | 105 |

Introduction

In spite of the fact that the oral region comprises only 1% of the whole body area, oral injuries are considered as the second most common injury which represent 18% of all somatic injuries (*Malmgren et al., 2012*). The incidence of dental injuries in children is in the range of 1- 3% while the prevalence in the primary dentition ranges around 30% in most studies (*Andersson et al., 2013*).

Traumatic dental injury (TDI) has become a worldwide dental health problem affecting both primary and permanent teeth of children and adolescents. According to epidemiological studies from different countries, about 40% of children have their first dental visit due to a traumatic injury (*Wendt et al., 2010; Vuletić et al., 2014*). Injuries may impact children's quality of life through having negative long-term physical, aesthetic and psychological consequences, affecting their growth, weight, socializing and learning abilities, and also on the quality of life of their parents (*Aldrigui et al., 2011*).

The second most prevalent type of dental condition affecting children aged five years or younger is TDIs (*Siqueira et al., 2013*). Therefore, proper diagnosis, treatment plan, and follow-up are important factors in limiting possible complications of trauma. In addition patient or caregiver awareness of first aid measures at the time of trauma and their compliance afterward during follow-up are critical for TDIs prognosis.

Reporting on TDIs will help public health policy makers to identify children who are at high risk as well as possible causes and locations where children are more likely to have dental trauma. These information will help to reduce occurrence of TDIs and establish preventive strategies. Clinicians will benefit from data about frequency and pattern of TDIs as it will help them in improving and organizing their emergency care and to be more qualified in management of traumatic cases. Finally, limiting occurrence of TDIs will help to save costs of dental trauma for patients, insurance companies, and the economy.

There is a gap in knowledge about the incidence and prevalence of TDIs especially in primary teeth in Egypt. Recognizing this gap is of great importance to stimulate investigators regarding the development of studies that are relevant to this problem.