


Traumatic Dental Injury to Primary Teeth

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ABSTRACT:

Background: Traumatic dental injuries (TDI) in primary teeth can significantly impact the quality of life of affected children, often leading to discomfort and pain. These injuries encompass various diagnostic categories, such as concussion, luxation injuries, uncomplicated crown fractures, complicated crown fractures, and avulsion.

Methods: In April 2023, we conducted an extensive electronic literature search across multiple databases, including Web of Science, Scopus, PubMed, Google Scholar, African Journals Online, ResearchGate, and Google, utilizing the Population, Concept, and Context framework. Search terms and keywords were meticulously combined using Boolean operators. The screening of titles and abstracts of publications related to traumatic dental injuries in primary teeth among children was performed independently by three research assistants. Inclusion criteria encompassed original research articles, case reports, and case series related to traumatic dental injuries in primary teeth among children conducted in African countries. Review articles, systematic reviews, viewpoints, books, letters, editorials, book chapters, perspectives, and news pieces on the subject were excluded.

Results: Three independent investigators screened the full texts for inclusion criteria, resulting in the exclusion of twenty-six articles that did not meet the predefined criteria. Six articles were included, as they aligned with the aim of this review. All included studies were cross-sectional in nature.

Conclusion: Traumatic dental injuries in primary teeth are a noteworthy concern in children. The key recommendations include prevention strategies, prompt treatment, and continued follow-up within a dental care framework. The studies identified in this review encompassed data from five African countries. Further research involving diverse ethnic populations in Africa is essential to bridge existing knowledge gaps and contribute to the growing body of literature on this topic.

KEYWORDS: Africa, Children, Traumatic injuries, Primary teeth**INTRODUCTION:**

Traumatic dental injuries (TDI) in primary teeth are a public health problem.¹It can affect a child's masticatory functions and quality of life¹ when associated with discomfort and pain. Children are prone to traumatic dental injuries in primary teeth as a result of their poor stability during attempts to walk and increased locomotor experiences at different ages¹. They are also prone to traumatic dental injuries in primary teeth when passing through a stage of slow crawling¹ to walking with increased falls injuries from lack of coordination.²Accidental falls, road traffic accidents, collision³ with objects or person and hitting items are possible causes of traumatic dental injuries in children. Home, school and street³ are places where the traumatic dental injuries to primary teeth can occur among children. Traumatic dental injuries to primary teeth among children, when left untreated, can in due course cause problems to the underlying permanent teeth with oral conditions such as hypoplasia, discoloration and delay tooth eruption. The aim of this article is to review the available studies on the traumatic dental injuries to primary teeth among children in Africa continent.

LITERATURE SEARCH METHOD

An electronic literature search in Web of science, Scopus, PubMed, Google Scholar, African journals online, Researchgate and Google was done in April, 2023 using the Population, Concept and Context framework.⁴

Population: Children, toddlers, infants

Concept: Traumatic dental injuries to primary teeth

Context: Studies carried out in Africa continent, published in English

language and in electronic database. The keywords used were African children , traumatic , deciduous teeth, sub-Saharan Africa, toddlers, primary teeth, trauma, dental injuries, African region. Search terms and keywords were combined by Boolean operators. Three independent investigators (research assistants) screened titles and abstracts of publications on traumatic dental injuries to primary teeth among children studies, and potential references to identify which studies met the inclusion criteria of this review. Information was extracted from the full texts of articles regarding the location of the research and the main content. The inclusion criteria were original research articles, case report, case series related to traumatic dental injuries to primary teeth among children carried out in Africa countries, published in English and in electronic databases, while review articles, systematic reviews, viewpoints, books, letters, editorials, book chapters, perspectives, and news related to traumatic dental injuries to primary teeth among children were excluded. Original research articles, case report, case series related to traumatic dental injuries to children without any information on dental injuries to primary teeth were also excluded. Study data of the included articles were extracted and collated in a table, including study details (author(s), year of publication, study population, study location or country, study objectives, classification system used, study design) .All identified studies in Africa countries that met the inclusion criteria were included and if relevant data were missing, the authors of the articles were contacted for additional information via e-mail. No specified time frame was used during the search, any additional studies carried out in Africa continent, identified from the reference lists of published papers were retrieved from the web using Google scholar and Google search engines.

RESULTS

Fifty nine articles were identified; Twenty seven duplicates were removed during screening. Full text were screened using inclusion criteria by three independent investigators (research assistants). Twenty six articles were excluded because they did not meet the inclusion criteria. Six articles were included as they were assessed to meet the aim of the review.

The six articles included were all cross sectional studies. One study was carried out in South Africa, Sudan, Egypt and Ghana respectively; while two studies were carried out in Nigeria among the articles eligible for review.

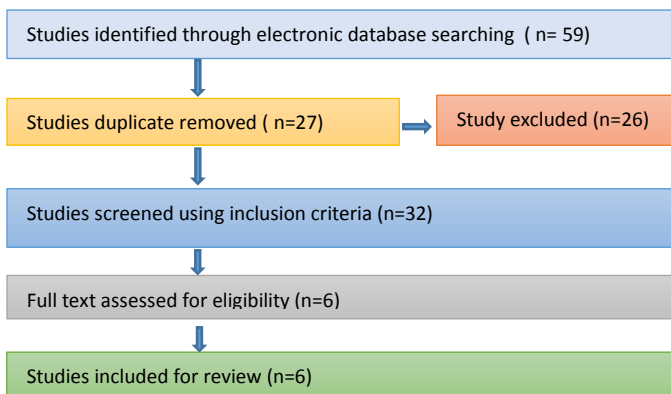


Figure 1: Flowchart of articles process

Table 1: Summary of identified studies on traumatic dental injuries to primary teeth among children in Africa countries.

Author /Year of publication	Study population	Study design	Study objective	Classification system used	Country of study
Hargreaves ⁵ et al, 1999	1 to 5 years old children	Cross-sectional	To examine primary dentition trauma rates in South African pre-school children.	Index of Hargreaves & Craig	South Africa
Adekoya – Sofowora ⁶ et al, 2006	3 to 5 years nursery school children	Cross sectional	To determine by age and sex, the prevalence of traumatic dental injuries to primary incisor and canines and their distribution according to type in nursery school children.	Garcia – Godoy	Nigeria
Suliem an&Aw ooda, ⁷ 2018	3 to 5 years nursery school children	Cross sectional	To determine the prevalence of traumatic dental injuries in primary incisors among 3–5-year-old Sudanese preschool children and associated factors such as age, sex, and size of overjet , anterior open bite and site of severity	Andre asen	Sudan
Ademola&Kolawole ⁸ , 2018	1 to 4 years old children	Cross-sectional	To determine the prevalence of traumatic dental injuries to anterior teeth,the aetiological factors of anterior teeth trauma and the environmental factors predisposing sustaining of anterior teeth trauma in pre-school children	Andre asen	Nigeria
Shalan &Abo Bakr ⁹ ,2018	3 to 6 years school children	Cross-sectional	To assess the prevalence of dental caries, gingival	World Health Organisation	Egypt

			inflammation and traumatic injury among Egyptian preschool children	diagno stic criteria	
Adekeya Sofowora² et al, 2020	2 to 5 years old children	Cross sectional	To investigate the prevalence, aetiology, place of injury, and pattern of distribution of traumatic dental injuries to primary anterior teeth in Ghanaian pre-schoolers aged 2-5 years	World Health Organization diagnostic criteria	Ghana

DISCUSSION

Traumatic injuries to primary teeth can indirectly affect parents emotions¹ and can cause displacement of primary teeth, fracture of primary teeth or loss of primary tooth. Clinical presentations of traumatic injuries to primary teeth could be concussion, uncomplicated crown fracture, luxation injuries,² complicated crown fracture, root fracture and avulsion. The management of traumatic dental injuries to primary teeth can vary based on clinical presentation and radiographic findings. Early treatment and follow up within a dental home are recommended.

Africa has 54 countries¹⁰ with over 3000 ethnic groups.¹⁰ The aim of this article is to review the available studies on the traumatic dental injuries to primary teeth among children in Africa countries as studies will guide the need for an intervention for untreated traumatic dental injuries to primary teeth among children in underserved and un-served locality, studies will also guide the measures of prevention, and evidence based guidelines and recommendations toward the management of traumatic dental injuries among African children. Studies were identified from Nigeria while a study was identified from Egypt, Ghana, South Africa and Sudan respectively. These studies were school based, community based and hospital based studies. More studies from various countries in Africa will fill the knowledge gaps and add to the existing literature.

CONCLUSION

Traumatic dental injuries to primary teeth can occur in children through falls, plays, collision with person or inanimate objects and accidents. It can occur in home, school, street and playing fields. Treatment of traumatic dental injuries to primary teeth varies based on clinical presentation and radiographic findings. Prevention of trauma to primary teeth through education and awareness programs among parents, guardians and teachers, and supervision of children during play could reduce the incidence of traumatic dental injuries to primary teeth. The studies identified were from few countries in Africa and studies will guide evidence based knowledge towards the incidence, need for intervention and management of traumatic dental injuries to primary teeth among African children. More studies from diverse ethnic population in Africa will fill the knowledge gaps and add to the existing literature.

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