

# Prevalence and Distribution of Developmental Dental Anomalies in Pediatric Patients

## Çocuk Hastalarda Gelişimsel Dental Anomalilerin Görülme Sıklığı ve Dağılımı

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### Keywords

Children, dental anomalies, prevalence

### Anahtar Kelimeler

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### Abstract

**Objective:** The objective of this study was to evaluate the prevalence of dental anomalies in paediatric patients attending the Department of Paediatric Dentistry, Kırıkkale University Faculty of Dentistry.

**Materials and Methods:** The study consisted a sample of 9173 patients, aged between 0-15 years, referred to our clinic between 1 August 2011-1 August 2012. The patients were examined clinically and radiographically in terms of the number, size, shape, structure and color anomalies.

**Results:** One hundred sixty six children (1.8%) were found to have developmental dental anomalies. The most frequently observed anomalies were congenitally missing teeth (0.52%) and supernumerary teeth (0.27%). Anomalies such as dens invaginatus (0.03%), dentinogenesis imperfecta (0.02%) and dilaceration (0.02%) were encountered more rarely.

**Conclusion:** Early diagnosis and determination of the prevalence of dental anomalies in children is important in the treatment planning.

### Öz

**Amaç:** Bu çalışmanın amacı; Kırıkkale Üniversitesi Diş Hekimliği Fakültesi, Pedodonti Kliniği'ne başvuran çocuk hastalarda gelişimsel dental anomali görülme sıklığının değerlendirilmesidir.

**Gereç ve Yöntemler:** Çalışmaya, kliniğimize 1 Ağustos 2011-1 Ağustos 2012 tarihleri arasında başvuran, 0-15 yaşları arasındaki 9173 hasta dahil edilmiş ve bu hastalar klinik ve radyografik muayenede sayı, boyut, şekil, doku ve renk anomalileri açısından değerlendirilmiştir.

**Bulgular:** Değerlendirme sonucu, 166 çocukta (%1,8) gelişimsel dental anomali olduğu saptanmıştır. En sık olarak, diş eksikliği (%0,52), süpernümerer diş (%0,27) gibi sayı anomalileri tespit edilirken; dens invaginatus (%0,03), dilaserasyon (%0,02), dentinogenezis imperfekta (%0,02) gibi anomalilere daha nadir rastlandığı görülmüştür.

**Sonuç:** Çocuklarda görülen dental anomali prevalansının tespiti ve erken teşhisi, tedavi planlaması açısından önem taşımaktadır.

## Introduction

One of the important category of dental morphologic variations are the developmental dental anomalies (1,2). Dental anomalies are the dental structure changes that may be caused by genetic and environmental factors during tooth formation (3,4). When the dental development is influenced by genetic, epigenetic or environmental factors, anomalies in the shape, size, number and position of the tooth may occur (4-6).

One of the important categories of dental symptomatology is developmental dental anomalies (7). The prevalence of dental anomalies can provide important information for both the anthropological and clinical management of patients. Also the incidence and distribution of the anomalies are essential to understanding the differences within and between populations (1,7,8).

The various developmental dental anomalies are often observed during dental examination (7). Studies including clinical and radiographic evaluation of the incidence of dental anomalies in children, have reported values ranging from 6.0% to 0.012% (9).

The objective of this study was to evaluate the prevalence of dental anomalies in pediatric patients aged between 0-15 years, attending the Department of Paediatric Dentistry, Kırıkkale University Faculty of Dentistry.

## Materials and Methods

The study consisted a sample of 9173 patients, aged between 0-15 years, referred to the Department of Paediatric Dentistry, Kırıkkale University Faculty of Dentistry between 1 August 2011-1 August 2012.

The patients were examined clinically and radiographically in terms of the number, size, shape, structure and color anomalies.

Due to the young age of the patients, evaluation of the third molars were excluded from the study (10). If necessary, for the detection and assessment of anomalies; periapical, occlusal and/or panoramic radiographs were taken.

The parameters such as patient's age, gender, region and type of dental anomaly and family history were recorded. The data were analyzed with descriptive statistics.

## Results

The study comprised of 9173 children, and 166 children with a prevalence of 1.8% (mean age 9.7) were found to have developmental dental anomalies. Table 1 shows the distribution of patients according to gender and the prevalence of the dental anomalies present.

Patients with dental anomalies were 92 females (55.4%, mean age 10.1) and 74 males (44.6%, mean age 9.4).

The most frequently observed anomalies were congenitally missing teeth (0.52%) and supernumerary teeth (0.27%). Mandibular second premolar teeth were observed as the most common missing teeth. Supernumerary teeth were commonly observed in the maxillary anterior region as mesiodens.

Anomalies such as dens invaginatus (0.03%), dentinogenesis imperfecta (0.02%) and dilaceration (0.02%) were encountered more rarely.

The frequency of other anomalies was as follows: molar-incisor hypomineralization 0.25%, turner hypoplasia 0.1%, fluorosis 0.1%, odontoma 0.1%,

**Table 1. Distribution of children with dental anomalies according to gender**

Dental anomaly	Male	Female	Total (% prevalence)
Congenitally missing teeth	20	28	48 (0.52%)
Supernumerary	10	15	25 (0.27%)
Molar-incisor hypomineralization	11	12	23 (0.25%)
Turner hypoplasia	8	6	14 (0.1%)
Fluorosis	7	4	11 (0.1%)
Odontoma	4	6	10 (0.1%)
Fusion	5	4	9 (0.09%)
Gemination	3	3	6 (0.06%)
Amelogenesis imperfecta	3	2	5 (0.05%)
Dens invaginatus	1	2	3 (0.03%)
Talon cusp	1	1	2 (0.02%)
Taurodontism	2	-	2 (0.02%)
Macrodontia	-	2	2 (0.02%)
Dentinogenesis imperfecta	1	1	2 (0.02%)
Dilaceration	1	1	2 (0.02%)
Ectopic eruption	-	1	1 (0.01%)
Microdontia	-	1	1 (0.01%)

fusion 0.09%, gemination 0.06%, amelogenesis imperfecta 0.05%, dens invaginatus 0.03%, talon cusp 0.02%, taurodontism 0.02%, macrodontia 0.02%, dentinogenesis imperfecta 0.02%, dilaceration 0.02%, ectopic eruption 0.01% and microdontia 0.01%.

## Discussion

Developmental dental anomalies can be diagnosed clinically and treatment planning is important for such reasons: anomalies are often associated with some problems such as caries (11), poor oral hygiene (12), orthodontic (13) and aesthetic concerns (14). In addition, when these anomalies are observed, especially if they are multiple, some syndromes may be considered (15,16). For such reasons the prevalence and distribution of dental anomalies become important (17).

In this study, the most frequently observed anomaly was congenitally missing teeth and this finding is similar to the studies have been done before in Turkish children (10,18). Mandibular second premolar tooth was reported as the most common missing tooth similar to the previous studies (10,18). Also in the studies evaluating Swedish, Indian and Saudi Arabian population, it was found that congenitally missing teeth had the highest prevalence among other dental anomalies (7,19,20).

Supernumerary teeth are frequently observed in dental examination however the etiology is unknown (7). The prevalence of supernumerary teeth was found as 0.27% in the present study similar to the prevalence in the western region of Saudi Arabia which was reported to be 0.3% (19). Also it has been reported that the majority of the supernumerary teeth were mesiodens, similar to the present study (10,20). However other studies have reported higher prevalence of supernumerary teeth than reported in the present study (1,4,7,10,21).

After supernumerary teeth, the most frequently observed anomalies were as follows; molar-incisor hypomineralization (0.25%), turner hypoplasia (0.1%) and fluorosis (0.1%). Other prevalence studies mostly evaluated the panoramic radiographs of the patients (6,7,10,18,22), because of this reason enamel defects could not be seen in the radiographs. However Popoola et al. (17) have evaluated anomalies after dental examination similar to the present study, and they have reported the prevalence of enamel hypoplasia as 2.2%, but not classified the hypoplasias.

In the present study, the prevalence of other anomalies (odontoma, fusion, dens invaginatus, talon cusp, taurodontism, macrodontia, dilaceration, ectopic eruption and microdontia) were observed more rare than other prevalence studies (4,7,10,17). However, in some of the prevalence studies gemination (10) and macrodontia (17) were not observed in any of the patients in their study population. In the present study, 6 patients (0.06%) had gemination and 2 patients (0.02%) had macrodontia.

This study has showed that the prevalence of various dental anomalies displays differences from other similar studies. The differences may depend on the reasons such as sample selection, sample size and area of patient selection. These reasons are related to the racial and genetic differences between populations (7).

## Conclusion

Dental anomalies can cause oral health problems, e.g. aesthetic and functional damages; therefore, early diagnosis is much important (6). To reduce complications, careful diagnosis and determination of the prevalence of dental anomalies in children are essential in the treatment planning.

### Ethics

**Ethics Committee Approval:** It was not taken.

**Informed Consent:** Informed consent was obtained from parents/guardians.

**Peer-review:** Internally peer-reviewed.

### Authorship Contributions

Surgical and Medical Practices: M.E.A., I.Ş.S., Concept: I.Ş.S., A.A.O., Design: M.E.A., I.Ş.S., Data Collection or Processing: M.E.A., I.Ş.S., A.A.O., Analysis or Interpretation: M.E.A., I.Ş.S., A.A.O., Literature Search: M.E.A., Writing: M.E.A.

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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