

Prevalence of numerical dental anomalies on panoramic radiographs of pediatric patients in Azogues, Ecuador, 2020–2024*

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ABSTRACT

Objective: To determine the prevalence of numerical dental anomalies in patients aged 4 to 16 years through the analysis of panoramic radiographs in the city of Azogues, Ecuador, during the 2020–2024 period. **Materials and methods:** A retrospective study was conducted analyzing 640 panoramic radiographs of patients aged 4 to 16 years from a radiology center in the city of Azogues. Demographic variables (age and sex) and characteristics of the dental anomalies (type, location, dentition, and affected tooth) were recorded. Data were processed descriptively using SPSS statistical software. **Results:** An overall prevalence of dental anomalies of 24.1% (n = 154) was determined. Among these, dental agenesis predominated (n = 255), occurring most frequently in adolescents (68.9%) and, with a slight majority, in females (52.4%); it mainly affected third molars (34.2%) and second premolars (25.8%). In addition, 26 cases of supernumerary teeth were identified, located mostly in the maxilla (88.5%), with a predominance of mesiodens (65.4%), showing an equal distribution between sexes. **Conclusions:** Dental agenesis was the most frequent numerical anomaly, most commonly affecting the third molars and second premolars. In contrast, supernumerary teeth occurred less frequently and were located predominantly in the maxilla.

Keywords: dental anomalies, dental agenesis, supernumerary teeth, dental radiography

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INTRODUCTION

The development of dentition is an integral part of human growth and plays a crucial role in the stomatognathic system, including mastication, speech, and facial esthetics. Furthermore, proper dental development contributes to the functional balance of the body and overall well-being, as teeth are involved in biological and social processes throughout an individual's life (1).

Tooth formation begins at approximately the sixth week of intrauterine life through a complex biological process known as odontogenesis. This process occurs through different morphological and histological stages involving interactions between the ectodermal epithelium and ectomesenchyme. As a result of these interactions, the structural components of the tooth—including enamel, dentin, the dentin-pulp complex, and the supporting tissues that constitute the dental organ—are formed (1,2).

Throughout human development, three stages of dentition occur: primary, mixed, and permanent. Primary dentition begins to erupt at approximately six months of age and consists of 20 teeth. Subsequently, the mixed dentition phase begins—a period in which primary and permanent teeth coexist—which is considered a critical stage in the development of the craniofacial system. Permanent dentition then develops progressively from approximately six years of age through adolescence (3–6).

During these developmental stages, alterations that affect the physiological formation of dental organs may occur. These variations are known as dental anomalies and correspond to developmental changes affecting the number, size, shape, or structure of the teeth (7–9). These conditions may affect both primary and permanent dentitions, and may occur in the maxilla, mandible, or both (10,11).

Dental anomalies involving tooth number are among the most frequently encountered in clinical practice. This group includes dental agenesis, defined as the congenital absence of one or more teeth due to failure of tooth germ development, and hyperdontia, which is characterized by the presence of supernumerary teeth, that is, teeth in addition to those normally present in dentition (9,12).

These anomalies may result in various clinical consequences, including disturbances in tooth eruption, malocclusion, crowding, esthetic concerns, and functional difficulties. Therefore, early identification is essential for timely management and prevention of complications in the stomatognathic system (8,9).

In this context, panoramic radiography is a widely used diagnostic tool in dental practice because it provides an overall assessment of dentition development, enables identification of the presence or absence of teeth, and facilitates the detection of potential alterations during dental growth (13,14).

Despite the relevance of these conditions, information regarding their frequency in specific populations remains limited. In particular, in the city of Azogues, Ecuador, there are no studies that determine the prevalence of these numerical dental variations in children and adolescents. Therefore, this study aimed to determine the prevalence of dental number anomalies in patients aged 4 to 16 through the analysis of panoramic radiographs during the 2020–2024 period.

MATERIALS AND METHODS

This was an observational, descriptive, cross-sectional, retrospective study. It was conducted based on the analysis of digital panoramic radiographs stored in the database of the BIOIMAGEN 3D radiology center, located in the city of Azogues, Ecuador. This institution provides dental imaging diagnostic services to the general population, requested based on clinical indications for the evaluation of dental development, diagnosis of abnormalities, and treatment planning.

The radiographs analyzed corresponded to patients aged 4 to 16 who were evaluated during the 2020–2024 period and were part of the institutional database of the aforementioned radiology center. The institution has formalized informed consent procedures and anonymization protocols, which ensure the confidentiality of the information. The study was approved by the Human Research Ethics Committee of Universidad Católica de Cuenca under registration number CEI-SH-UCACUE-2025-069.

The initial study population consisted of 720 radiographs from patients of both sexes. Only radiographic studies corresponding to the established age range and exhibiting optimal image quality, with adequate contrast and sharpness, were included. Images from individuals with previously diagnosed systemic diseases or genetic syndromes were excluded because these conditions could influence the characteristics under evaluation.

Since all available radiographs that met the selection criteria were included, census sampling was used. Therefore, sample size calculation was omitted, and all accessible records from the study period were included. Of the 720 radiographs initially collected, 80 were excluded; consequently, the final sample consisted of 640 radiographs.

As a preliminary step, a calibration process was conducted with the assistance of a specialist in dental radiology. During this phase, several panoramic radiographs were jointly reviewed to establish clear criteria and standardize the identification of numerical dental anomalies, particularly dental agenesis and supernumerary teeth. The Kappa coefficient was used to assess diagnostic agreement. At this stage, 10% of the total sample was used; these images were analyzed exclusively for calibration and, according to the methodological protocol, were not included in the final study analysis.

The radiographs were analyzed individually using the digital panoramic images stored in the radiology center's database. Each image was carefully examined to identify the presence or absence of numerical dental anomalies. During this phase, the following variables were recorded: sex, age, dental arch, affected tooth group, dentition type, and type of anomaly. The information was compiled in a Microsoft Excel spreadsheet.

For age analysis, patients were divided into three age groups: 4–7 years, 8–11 years, and 12–16 years. This categorization was based on the stages of dental development and the transition between the primary, mixed, and permanent dentitions, facilitating a better interpretation of results according to the tooth eruption process.

To prevent examiner visual fatigue and maintain the rigor of the observation, a maximum limit of 20 radiographs analyzed per day was established. Once data collection was completed, the data were exported to SPSS version 29 statistical software, where descriptive analysis was performed using simple and cross-tabulated frequency tables to determine the distribution and prevalence of numerical dental anomalies in the study sample.

RESULTS

A total of 640 panoramic radiographs from patients aged 4 to 16 were evaluated. Regarding the characteristics of the study population, the age distribution showed that the largest proportion of individuals was in the 12–16-year age group, accounting for 45.0% ($n = 288$) of the total sample. Sex distribution was relatively balanced, with 330 female patients (51.6%) and 310 male patients (48.4%). Regarding dentition type, a slight predominance of permanent dentition was observed, accounting for 51.2% ($n = 328$) of the sample, compared with 48.8% ($n = 312$) for primary dentition (Table 1).

Table 1. Characteristics of the study population.

Variables	n	%
Age		
4–7 years	135	21.1
8–11 years	217	33.9
12–16 years	288	45.0
Sex		
Female	330	51.6
Male	310	48.4
Dentition type		
Permanent	328	51.2
Primary	312	48.8
Total	640	100.0

In turn, 24.1% ($n = 154$) of patients presented with at least one dental anomaly (95% CI: 20.8–27.4%), whereas 75.9% ($n = 486$) showed no anomalies (Table 2).

Table 2. Presence and frequency of dental anomalies.

Dental anomaly	n	%
Presence of dental anomaly	154	24.1
Absence of dental anomaly	486	75.9
Total	640	100.0

Among the identified anomalies, 225 cases of dental agenesis and 26 cases of supernumerary teeth were recorded. Some patients presented with multiple conditions; therefore, the total number of recorded anomalies exceeded the number of affected individuals. Consequently, the specific analysis of each condition was based on the total number of anomalies identified.

The highest concentration of dental agenesis cases was observed in the 12–16-year age group, which accounted for 68.9% ($n = 155$) of the findings. Lower proportions were observed in the 4–7-year age group, with 16.4% ($n = 37$), and the 8–11-year age group, with 14.7% ($n = 33$). Regarding sex distribution, there was a slight predominance among female patients (52.4%; $n = 118$) compared with male patients (47.6%; $n = 107$), indicating a similar distribution between both groups (Table 3).

Regarding the presence of numerical dental anomalies according to sex, 80 female patients presented with anomalies, whereas 250 did not, out of a total of 330 individuals evaluated. In the male group, 74 patients presented with anomalies and 236 did not, out of a total of 310 individuals. The distribution was similar between

both sexes, with no substantial differences observed. Consistently, the chi-square test yielded a p-value of 0.695, indicating no statistically significant association between sex and the presence of numerical dental anomalies (Table 4).

Table 3. Frequency of dental agenesis according to age and sex.

Variables	n	%
Age		
4–7 years	37	16.4
8–11 years	33	14.7
12–16 years	155	68.9
Sex		
Female	118	52.4
Male	107	47.6
Total	225	100.0

Regarding the distribution by age group, 35 patients with dental anomalies and 100 without anomalies were identified in the 4–7-year age group. In the 8–11-year age group, 45 cases with anomalies and 172 without anomalies were identified, whereas the 12–16-year age group included 74 patients with anomalies and 214 without anomalies, making it the age group with the largest number of records. The chi-square test yielded a p-value of 0.111, indicating no statistically significant association between age and the presence of numerical dental anomalies (Table 4).

Table 4. Association between numerical dental anomalies, age, and sex.

Characteristic	Anomaly present	No anomaly	Total	p*
Sex				
Female	80	250	330	0.695
Male	74	236	310	
Age				
4–7 years	35	100	135	0.111
8–11 years	45	172	217	
12–16 years	74	214	288	
Total	154	486	640	

* P-value obtained using the chi-square test.

Furthermore, the highest proportion of cases was found in the upper dental arch: 31.1% (n = 70) involved the right side and 30.2% (n = 68) involved the left side of the total number of missing teeth. In contrast, the lower dental arch showed a lower frequency, with 20.4% (n = 46) involving the left side and 18.2% (n = 41) involving the right side. Regarding tooth groups, third molars were the most affected, accounting for 34.2% (n = 77) of cases, followed by second premolars at 25.8% (n = 58). First premolars accounted for 11.6% (n = 26), while lateral incisors accounted for 10.2% (n = 23). Similarly, most findings were observed in permanent dentition, accounting for 97.3% (n = 219) of teeth with agenesis, compared with primary dentition, in which agenesis was reported in only 2.7% (n = 6) of cases (Table 5).

Table 5. Distribution of dental agenesis cases.

Location	n	%
Dental arch		
Lower right	41	18.2
Lower left	46	20.4
Upper left	68	30.2
Upper right	70	31.1
Tooth group		
Canines	4	1.8
Central incisors	10	4.4
Lateral incisors	23	10.2
First molar	20	8.9
First premolar	26	11.6
Second molar	7	3.1
Second premolar	58	25.8
Third molar	77	34.2
Dentition type		
Permanent	219	97.3
Primary	6	2.7
Total	225	100.0

As for supernumerary teeth (n = 26), the highest frequency was observed in the 12–16-year age group, accounting for 46.2% (n = 12) of the recorded teeth. The 4–7-year and 8–11-year age groups each accounted for 26.9% (n = 7). In addition, the distribution by sex was equal, with 50.0% (n = 13) of cases occurring in female patients and 50.0% (n = 13) in male patients, indicating no sex predilection (Table 6).

Table 6. Frequency of supernumerary teeth according to age and sex.

Variables	n	%
Age		
12–16 years	12	46.2
4–7 years	7	26.9
8–11 years	7	26.9
Sex		
Female	13	50.0
Male	13	50.0

Regarding the dental arch, there was a clear predominance in the maxilla, accounting for 88.5% ($n = 23$), compared with the mandible, which accounted for only 11.5% ($n = 3$) of the total number of supernumerary teeth identified. Regarding dentition type, supernumerary teeth were equally distributed, with 50% ($n = 13$) occurring in permanent dentition and 50% ($n = 13$) in primary dentition. Regarding the most frequent location, *mesiodens* were the most prevalent, accounting for 65.4% ($n = 17$) of cases. To a lesser extent, they were identified in the canine region, accounting for 23.1% ($n = 6$), and in the premolar region, accounting for 11.5% ($n = 3$), with no cases reported in the distomolar or paramolar regions (Table 7).

Table 7. Distribution of supernumerary teeth cases.

Location	n	%
Dental arch		
Mandible	3	11.5
Maxilla	23	88.5
Dentition type		
Permanent	13	50.0
Primary	13	50.0
Location		
Between premolars	3	11.5
Canine group	6	23.1
Mesiodens	17	65.4
Distomolars	0	0.0
Paramolars	0	0.0
Total	26	100.0

DISCUSSION

The evaluation of numerical dental anomalies in the study population revealed patterns consistent with those

described in the literature, although some differences may be related to factors specific to each population group. In terms of dental agenesis, the 12–16-year age group had the highest frequency, at 68.9%, which is consistent with the findings reported by Pamukcu et al. (15), who observed that the absence of third molars was more prevalent among adolescents aged 12–19 (29.3%) than among individuals older than 20 (20.5%). This finding reinforces the tendency toward more frequent identification of numerical dental anomalies during adolescence, a stage when the eruption of most permanent teeth has been completed.

As for sex, the results showed a slight female predominance (52.4%), which is consistent with the findings of Pamukcu et al. (15), who reported a higher prevalence of dental agenesis among females (27.3% vs. 21.4% in males). This pattern was also observed in the population studied by Tapuyo and Díaz (16) in Guayaquil, where dental agenesis was more frequent among females, particularly between 6 and 12 years of age. Furthermore, these authors reported that age was a significant variable among patients presenting with some type of dental anomaly ($p < 0.05$).

Dental agenesis was also more frequently located in the maxilla, accounting for 61.3% of cases. This finding is consistent with that reported by Pamukcu et al. (15), who found a higher prevalence in the maxilla (11.2% vs. 5.8% in the mandible). Similarly, third molars were the most frequently affected tooth group, followed by second premolars. These results partially agree with those reported by Eliacik et al. (17), who identified a higher frequency of absence in the mandibular second premolars (10.17%). However, they differ from the findings of Sella Tunis et al. (6), in which maxillary lateral incisors had the highest frequency of agenesis (62.3%), followed by mandibular second premolars (60.6%), as well as from those described by Shen et al. (18), who reported greater involvement of mandibular lateral incisors. The variations observed among studies highlight the influence of genetic, environmental, and ethnic factors on the distribution of dental agenesis.

In general terms, the literature indicates that dental agenesis is one of the most common dental anomalies, with prevalence rates ranging from 2% to 8% in the permanent dentition, depending on the population studied (12,16,19). The results of this study fall within the ranges reported in the scientific literature.

On the other hand, a low frequency of supernumerary teeth was observed ($n = 26$), with the highest frequency occurring in the 12- to 16-year-old group (46.2%). Sex distribution was equal (50% each). These results differ from those reported by Mallineni et al. (20), who observed a male predominance of 76% compared with 24% in females; similarly, Singh et al. (21) reported a

male-to-female ratio of 2.29:1. Similarly, He et al. (22) reported a clear male predominance of 3.2:1, whereas Arandi et al. (23) described prevalence rates below 0.86%, with a predominance among males (76.5% vs. 23.5% in females). In contrast, the findings of Hajmohammadi et al. (24) are similar to those of the present study, as they reported no significant differences according to sex.

Regarding the location of supernumerary teeth, the vast majority were found in the maxilla (88.5%), with a marked predominance of mesiodens (65.4%). These findings are consistent with those reported by Sella Tunis et al. (6), who found that 97.0% of supernumerary teeth were located in the anterior maxillary region. Similarly, Mallineni et al. (20) reported that 87.0% were mesiodens. He et al., in turn, (22) confirmed this pattern, reporting 98.1% in the maxilla, whereas Arandi et al. (23) reported 78.3%. However, Hajmohammadi et al. (24) identified distomolars (44.1%) and parapremolars (29.4%) as the most common supernumerary teeth, findings that contrast with the distribution observed in this study.

A relevant aspect highlighted in the literature is the finding reported by Marzouk et al. (25), who, through a meta-analysis, identified a strong association between dental anomalies and orofacial clefts, with an odds ratio (OR) of 14.2 for dental agenesis and 5.7 for supernumerary teeth. Although patients with syndromes or malformations were not included in the population of this study, this finding highlights the need to consider

genetic and craniofacial developmental factors when explaining variations in the prevalence and types of dental anomalies.

One limitation of the study is that the research was conducted using panoramic radiographs obtained from a single radiology center; therefore, the results represent only the population served by that facility and cannot be generalized in absolute terms. Furthermore, since this was a retrospective study based on radiographic records, the available information depended on image quality and the data recorded in the institutional database.

CONCLUSIONS

Numerical dental anomalies—including dental agenesis and supernumerary teeth—are relatively common in the population studied, with greater predominance in permanent dentition. Dental agenesis primarily affects adolescents aged 12–16, shows a slight female predominance, and is more common in the upper dental arch, particularly involving the absence of third molars and second premolars. On the other hand, supernumerary teeth show an equal distribution between both sexes, with diagnoses concentrated predominantly in the 12–16-year age group. This condition occurs more frequently in the maxilla, with a notable prevalence of mesiodens. Although its frequency is lower than that of dental agenesis, its timely identification represents a clinically relevant finding.

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REFERENCES

1. Novacescu D, Dumitru CS, Zara F, et al. The morphogenesis, pathogenesis, and molecular regulation of human tooth development—A histological review. *Int J Mol Sci.* 2025;26(13):6209. doi:[10.3390/ijms26136209](https://doi.org/10.3390/ijms26136209)

2. Zhang H, Gong X, Xu X, et al. Tooth number abnormality: from bench to bedside. *Int J Oral Sci.* 2023;15:5. doi:[10.1038/s41368-022-00208-x](https://doi.org/10.1038/s41368-022-00208-x)
3. Ayala Y, Carralero LC, Leyva BR. [Affecting factors of dental eruption]. *Correo Cient Méd [Internet].* 2018;22(4):681-94. Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1560-43812018000400013 Spanish.
4. Alzate-García FL, Serrano-Vargas L, Cortes-López L, et al. [Chronology and sequence of tooth eruption in the first transitional period]. *CES Odontol [Internet].* 2016;29(1):57-69. Available from: http://scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-971X2016000100007 Spanish.
5. Hovorakova M, Lesot H, Peterka M, et al. Early development of the human dentition revisited. *J Anat.* 2018;233(2):135-45. doi:[10.1111/joa.12825](https://doi.org/10.1111/joa.12825)
6. Sella Tunis T, Sarne O, Hershkovitz I, et al. Dental anomalies' characteristics. *Diagnostics.* 2021;11(7):1161. doi:[10.3390/diagnostics11071161](https://doi.org/10.3390/diagnostics11071161)
7. Díaz CE, Arispe CM, Díaz FL, et al. [Dental anomalies of number in Peruvian pediatric patients during the years 2011-2020]. *Salud Uninorte.* 2023;39(2):465-76. doi:[10.14482/sun.39.02.346.546](https://doi.org/10.14482/sun.39.02.346.546) Spanish.
8. Diaz-Reissner CV, Casas-García I, Roldán-Merino J. [Quality of life related to oral health: Impact of various socio-demographic factors and dental clinical situations. Review of literature]. *Int J Odontostomat.* 2017;11(1):31-9. doi:[10.4067/S0718-381X2017000100005](https://doi.org/10.4067/S0718-381X2017000100005) Spanish.
9. Olatosi OO, Oyapero A, Akinwande KO, et al. Pattern and prevalence of dental anomalies among a paediatric population in Lagos, Nigeria. *Niger Postgrad Med J.* 2022;29(2):167-72. doi:[10.4103/npmj.npmj_23_22](https://doi.org/10.4103/npmj.npmj_23_22)
10. Magalhães G, Paz E, Sousa YT, et al. [Diagnosis of anomalies in dental panoramic X-ray]. *Rev Odontol Bras Central.* 2019;28(87):244-7. doi:[10.36065/robrac.v28i87.1315](https://doi.org/10.36065/robrac.v28i87.1315) Portuguese.
11. Urzúa B, Ortega-Pinto A, Adorno-Farias D. Genetic etiology of development alterations affecting the number, size, form, structure and eruption of the teeth. *J Oral Med Dent Res.* 2020;1(2):9. doi:[10.52793/JOMDR.2020.1\(2\)-09](https://doi.org/10.52793/JOMDR.2020.1(2)-09)
12. Gutiérrez N, López A. [Frequency of teeth number anomalies in Costa Rican children at the Faculty of Dentistry University of Costa Rica]. *Odovtos Int J Dent Sc [Internet].* 2019;21(1):95-102. Available from: https://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S2215-34112019000100095&lng=en&nrm=iso&tlng=es Spanish.
13. Reis JC, Fraga MA, De-Azevedo-Vaz SL, et al. Prevalence of dental anomalies and bone alterations in children's panoramic radiographies. *Rev Gaúch Odontol.* 2020;68:e20200028. doi:[10.1590/1981-863720200005820180073](https://doi.org/10.1590/1981-863720200005820180073)
14. Amado C, Andia RB, Pennisi F, et al. [Findings in panoramic radiographs of children between 6 and 15 years at a dental hospital in Argentina]. *Rev Asoc Odontol Argent.* 2022;110(3):e1101212. doi:[10.52979/raoa.1101212.1146](https://doi.org/10.52979/raoa.1101212.1146) Spanish.
15. Pamukcu U, Ispir NG, Alkurt MT, et al. Evaluation of the frequency of third molar agenesis according to different age groups. *Am J Hum Biol.* 2021;33(3):e23487. doi:[10.1002/ajhb.23487](https://doi.org/10.1002/ajhb.23487)
16. Tapuyo MY, Díaz DF. [Prevalence of developmental dental anomalies in 2D radiographs from a radiological center in Guayaquil]. *Rev Cient Espec Odontol UG.* 2023;6(2):35-43. doi:[10.53591/eoug.v6i2.2090](https://doi.org/10.53591/eoug.v6i2.2090) Spanish.
17. Eliacik BK, Atas C, Polat GG. Prevalence and patterns of tooth agenesis among patients aged 12–22 years: a retrospective study. *Korean J Orthod.* 2021;51(5):355-62. doi:[10.4041/kjod.2021.51.5.355](https://doi.org/10.4041/kjod.2021.51.5.355)
18. Shen Z, Wei J, Zhang J, et al. The prevalence of dental agenesis, supernumerary teeth and odontoma in a Chinese paediatric population: an epidemiological study. *BMC Oral Health.* 2025;25:458. doi:[10.1186/s12903-025-05819-4](https://doi.org/10.1186/s12903-025-05819-4)
19. Da Silva B, Rossi S, Ribeiro R, et al. [Prevalence of anomalies of shape and number in orthodontic patients: observational study]. *Res Soc Dev.* 2021;10(9):e3910917504. doi:[10.33448/rsd-v10i9.17504](https://doi.org/10.33448/rsd-v10i9.17504) Portuguese.
20. Mallineni SK, Aldhuwayhi S, Deeban Y, et al. Prevalence, occurrence, and characteristics of supernumerary teeth among the Saudi Arabian population using panoramic radiographs. *Diagnostics.* 2024;14(22):2542. doi:[10.3390/diagnostics14222542](https://doi.org/10.3390/diagnostics14222542)
21. Singh AK, Soni S, Jaiswal D, et al. Prevalence of supernumerary teeth and its associated complications among school-going children between the ages of 6 and 15 years of Jamshedpur, Jharkhand, India. *Int J Clin Pediatr Dent.* 2022;15(5):504-8. doi:[10.5005/jp-journals-10005-2442](https://doi.org/10.5005/jp-journals-10005-2442)
22. He L, Que G, Yang X, et al. Prevalence, clinical characteristics, and 3-dimensional radiographic analysis of supernumerary teeth in Guangzhou, China: a retrospective study. *BMC Oral Health.* 2023;23(1):351. doi:[10.1186/s12903-023-03032-9](https://doi.org/10.1186/s12903-023-03032-9)
23. Arandi NZ, Abu-Ali A, Mustafa S. Supernumerary teeth: a retrospective cross-sectional study in Palestine. *Pesqui Bras Odontopediatria Clin Integr.* 2020;20:e5057. doi:[10.1590/pboci.2020.029](https://doi.org/10.1590/pboci.2020.029)
24. Hajmohammadi E, Najirad S, Mikaeili H, et al. Epidemiology of supernumerary teeth in 5000 radiography films: investigation of patients referring to the clinics of Ardabil in 2015-2020. *Int J Dent.* 2021;2021(1):6669436. doi:[10.1155/2021/6669436](https://doi.org/10.1155/2021/6669436)
25. Marzouk T, Alves IL, Wong CL, et al. Association between dental anomalies and orofacial clefts: a meta-analysis. *JDR Clin Trans Res.* 2021;6(4):368-81. doi:[10.1177/2380084420964795](https://doi.org/10.1177/2380084420964795)