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Hypodontia, Gender-Based Differences and its Correlation with other Dental Clinical Features in Kosovar Adolescents

Hipodontija, razlike prema spolu i povezanost s drugim dentalnim kliničkim značajkama kosovskih adolescenata

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Abstract

Aim: The primary aim of this study was to evaluate the gender-based differences in patients with hypodontia. As a secondary outcome, the study looked into the correlation between hypodontia and other dental clinical features among Kosovar adolescents. **Material and Methods:** 3,306 students, aged between 15-21 years were examined in schools in Kosovo. Examinations were performed using a dental mirror to assess the number of teeth present, and dental impressions were taken from hypodontia subjects. Panoramic and periapical radiographs, as well as intraoral photographs, were taken in subjects who were suspected to have hypodontia to verify the diagnosis. **Results:** 77 of the examined subjects had hypodontia, among which 46 were females (59.7%) and 31 were males (40.3%). The most frequently missing teeth were the maxillary lateral incisors, followed by the mandibular second premolars. 68 patients (88.3%) had at least one dental clinical feature concurrent with hypodontia. **Conclusion:** No significant difference was noted in the prevalence of hypodontia according to gender. Teeth rotation was the most commonly observed clinical feature followed by inclination.

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Key words

Anodontia; Malocclusion; Adolescent; Kosovo

Introduction

Hypodontia is a dental anomaly referring to less than six congenitally missing teeth (excluding the third molars) (1,2). Other terms used to describe hypodontia are “tooth agenesis”, “oligodontia” and “anodontia”, however, tooth agenesis and hypodontia are used in this study as they refer to developmental failure of fewer teeth, while “oligodontia” and “anodontia” refer to more severe forms of tooth agenesis, typically with more than six missing teeth or complete dentition missing (3). Hypodontia is considered to have a strong genetic (4,5) component and is often seen in patients who also present other ectodermal anomalies, as well as non-syndromic patients with cleft lip and/or palate (CLP) (6). Other environmental factors, such as trauma, infections, and toxins can also be implicated in its incidence (3,7).

Depending on the population studied, the prevalence of hypodontia varies from 0.03 to 10.1%, making it the most prevalent dentofacial malformation in humans, with a reportedly higher incidence in the last few decades, particularly among Caucasians (2,8). Some studies also suggest a higher

Uvod

Hipodontija je dentalna anomalija kod koje kongenitalno nedostaje manje od šest zuba (osim trećih molara) (1, 2). Drugi nazivi za tu pojavu su *dentalna ageneza*, *oligodontija* te *anodontija*, no u ovom radu korišteni su termini ageneza zuba ili hipodontija zato što se odnose na razvojni nedostatak manjka zuba, a *oligodontija* i *anodontija* smatraju se težim oblicima ageneze zuba kada ih uglavnom nedostaje više od šest, ili uopće nema zuba (3). Smatra se da hipodontija ima snažnu genetsku (4, 5) komponentu te je česta kod pacijenata koji imaju i druge ektodermalne anomalije te kod nesindromskih pacijenata s rascjepom usnice i/ili nepca (CLP) (6). Drugi okolišni čimbenici kao što su trauma, infekcije i toksini mogu biti uključeni u incidenciju hipodontije (3, 7).

Ovisno o istraživanoj populaciji, prevalencija hipodontije varira od 0,03 do 10,1 %, pa je to najprevalentnija dentofacijalna anomalija kod ljudi, s time da je u posljednjih nekoliko desetljeća zabilježen porast incidencije, posebno među pripadnicima bijele rase (2, 8). U nekim istraživanjima autori ističu povećanu prevalenciju hipodontije kod žena u odno-

prevalence of hypodontia in females than in males, particularly in permanent dentition (3,9,10), however, no significant difference between genders was reported (2,11).

There is also a difference in the prevalence of hypodontia concerning primary and permanent dentition, tooth type, and ethnicity (2,12). The total prevalence of hypodontia in permanent dentition (excluding the third molars) was 5.5 % in Europeans (13).

Most hypodontia patients lack only one or two teeth, with the upper lateral incisors and second premolars being the most often missing teeth in populations of European origin (6).

Hypodontia is commonly reported in coexistence with other dental clinical features (2,3,6) such as taurodontism, peg-shaped incisors, teeth rotations and generalized spacing, canine-lateral incisor transposition, retained primary teeth, or abnormal dental morphologies (1). Microdontia is also highly reported in hypodontia case reports (3,24,25).

Hypodontia may cause alterations in the dentofacial features of the affected due to dental and functional compensation. Apart from the need for orthodontic treatment, hypodontia affects function, appearance and the overall quality of life of the patients. This emphasizes the importance of intervention.

While several studies have reported the prevalence of hypodontia and its correlation with other dental clinical features (24-28), there are no reports concerning the association of hypodontia in Kosovar adolescents. The present study aimed to evaluate the prevalence of hypodontia according to gender and its relation with different dental clinical features among Kosovar adolescents aged between 15-21 years.

Materials and methods

This is a sequential cross-sectional study which was performed between September 2010 and June 2012 in eight different schools, in different regions (Prishtine, Prizren, Podujeve, Gjilan, Ferizaj, Mitrovica, and Suhareka) of Kosovo.

A total of 3,306 students aged between 15-21 years were examined. Sample selection was carried out using a cluster sampling method. All schools from the list of Public Schools of Ministry of Education in the Republic of Kosovo were grouped by cities included in this study. In the first phase, one school was randomly selected from each group of cities except Prishtina, where two schools were selected making it in total eight schools. In the next phase, students were randomly selected from classes. Examinations of the subjects were performed by three orthodontists and eight dentists, all of them calibrated in advance. To assess the number of present teeth, examinations were performed using a dental mirror. When missing teeth were noticed and subjects gave no history of tooth extraction, panoramic and intraoral photographs were taken to diagnose hypodontia. Our examination revealed that 77 students had hypodontia, and they then represented the sample of our study. Dental impressions were taken from selected hypodontia subjects, and dental features were analyzed on the model casts.

Exclusion criteria were implemented through an examination of previous dental history. Subjects with a history of

su prema muškarcima, posebno u trajnoj denticiji (3, 9, 10), no nije ustanovljena statistički značajna razlika između spolova (2, 11).

Postoji također razlika u prevalenciji hipodoncije kad je riječ o mliječnoj i trajnoj denticiji, vrsti zuba te etničkoj skupini (2,12). Ukupna prevalencija hipodoncije u trajnoj denticiji (bez trećih molara) iznosi kod Europljana 5,5 % (13).

Većini pacijenata s hipodoncijom nedostaju jedan ili dva zuba. Tako u populacijama europskog podrijetla najčešće manjkaju gornji lateralni inciziv te drugi premolar (6).

Hipodoncija se često opisuje u koegzistenciji s drugim kliničkim dentalnim značajkama (2, 3, 6) kao što su taurodontizam, konični incizivi, rotacija zuba, generalizirana rastresitost, transpozicija kanina i lateralnog inciziva, retinirani mliječni zubi te abnormalna dentalna morfologija (1). Mikrodoncija je također često opisana u prikazima slučajeva pacijenata s hipodoncijom (3, 24, 25).

Hipodoncija može uzrokovati promjene u dentofacijalnim karakteristikama zbog funkcijske kompenzacije. Uz potrebu za ortodontskim liječenjem, hipodoncija zahvaća funkciju i izgled te utječe na sveukupnu kvalitetu života pacijenata, što ističe potrebu za intervencijom.

Iako je u nekoliko istraživanja opisana prevalencija hipodoncije i njezina korelacija s drugim kliničkim dentalnim obilježjima (24 – 38), nema podataka o njezinoj povezanosti kod kosovskih adolescenata. Ovo istraživanje imalo je za cilj procijeniti prevalenciju hipodoncije u odnosu prema spolu i njezin odnos s drugim kliničkim dentalnim značajkama među kosovskim adolescentima u dobi od 15 do 21 godine.

Materijal i metode

Ovo sekvencijsko presječno istraživanje provedeno je između rujna 2010. godine i lipnja 2012. godine u osam škola u različitim područjima Kosova (Priština, Prizren, Podujevo, Gnjilane, Uroševac, Mitrovica i Suha Reka).

Pregledano je ukupno 3306 učenika i studenata u dobi od 15 do 21 godine. Uzorak je odabran metodom uzorkovanja klastera. Sve škole na popisu javnih škola u Ministarstvu obrazovanja Republike Kosova grupirane su po gradovima i uključene u istraživanje. U prvoj fazi odabrana je po jedna škola iz svakoga grada osim Prištine, gdje su odabrane dvije, pa je ukupan broj škola bio osam. U sljedećoj fazi slučajnim su odabirom odabrani učenici u razredima. Preglede su obavila tri ortodonta i osam doktora dentalne medicine – svi su bili kalibrirani unaprijed. Kako bi se zabilježio broj prisutnih zuba, pregled je obavljen s pomoću dentalnog zrcala. Ako je koji zub nedostajao, a ispitanik nije potvrdio raniju ekstrakciju, učinjene su panoramske i intraoralne rendgenske snimke kako bi se dijagnosticirala hipodoncija. Tijekom pregleda pronašli smo 77 učenika s hipodoncijom, što je bio uzorak za istraživanje. Tim ispitanicima uzeti su otisci te su dentalne karakteristike analizirane na sadrenim modelima.

Tijekom uzimanja dentalne anamneze primjenjivani su kriteriji za isključivanje. Ispitanici koji su potvrdili prijašnje ekstrakcije, traume zuba, karijes, parodontalnu bolest ili ranije ortodontsko liječenje, isključeni su. Ukupno smo isključili

tooth loss from trauma, extractions, caries, periodontal disease, or previous orthodontic treatments were excluded. Altogether 3086 subjects were excluded from the study. In 220 subjects, panoramic and intraoral photographs were taken and another 143 subjects were excluded since no missing teeth were found. The final sample consisted of 77 subjects.

Informed consent forms were obtained from parents or their guardians before the examination of subjects under the age of 18, whereas direct approval was taken from subjects older than 18. The study was analyzed and approved by the Research Ethics Committee of the University Dentistry Clinical Center of Kosovo (University of Prishtina) and Ministry of Education, Science, and Technology of Kosovo. The authors read the Helsinki Declaration and followed the guidelines in this investigation.

Statistical analysis

Data analysis was performed using the Statistical Package for Social Sciences (version 20.0, SPSS Inc., Chicago, Illinois, USA). The normality of data distribution was assessed using the Kolmogorov-Smirnov test. Since the *p*-value was $>.001$ for each item, it was concluded that the sample data had a non-normal distribution. Therefore, non-parametric tests were used during the calculation of mean differences (i.e. Mann-Whitney test).

Results

In this study, out of the 3,306 students examined, 77 (2.3%) had hypodontia. Since the study focused on patients with hypodontia, the results were presented in terms of 77 patients identified. Out of 77 patients with hypodontia, 46 (59.7%) were females and 31 (40.3%) were males.

No significant difference was noted in the prevalence of hypodontia according to gender ($p>0.05$). The number of missing teeth ranged from 1 to 5, with an average of 1.8 missing teeth per subject. The mean number of missing teeth was 1.91 for females and 1.89 for males. No patient had more than five missing teeth. One missing tooth was found in 41.5% of the subjects, two missing teeth in 42.8%, and three to five absent teeth were observed in 15.6% of the subjects. Higher prevalence of missing teeth was noted in subjects aged 15-18 years (59.8%), compared to those aged 19-21 years (40.2%), which is shown in Table 1.

Among patients with hypodontia, 46 (59.7%) had maxillary hypodontia and 21 (27.3%) had mandibular hypodontia, while 10 patients (13%) had missing teeth in both jaws. The most frequently missing teeth were the maxillary lateral incisors, followed by the mandibular second premolars. The distribution of missing teeth is presented in Figure 1.

68 patients (88.3%) had at least one clinical feature concurrent with hypodontia. The distribution of clinical features associated with hypodontia is presented in Table 2. Teeth rotation was the most commonly observed clinical feature ($n = 35$; 45.5%), while the maxillary central right incisor was the most frequently rotated tooth. Inclination was found in 36.4% ($n=28$) of patients, with the maxillary lateral right incisor being the most frequently inclined tooth. All observed clinical features had a higher prevalence among female pa-

3086 ispitanika. Zatim su snimljene panoramske i intraoralne snimke 220 ispitanika te su isključena još 143 ispitanika zato što im nije ustanovljen nedostatak zuba. Konačni uzorak sastojao se od 77 ispitanika.

Roditelji i skrbnici maloljetnih ispitanika potpisali su informirani pristanak prije pregleda, a od punoljetnih izvorno je zatražen pristanak. Istraživanje je procijenilo i odobrilo Etičko povjerenstvo Sveučilišnog dentalnog kliničkog centra Kosova (Sveučilište u Prištini) i Ministarstvo obrazovanja, znanosti i tehnologije Republike Kosova. Autori su pročitali Helsinšku deklaraciju te su u ovom istraživanju pratili njezine smjernice.

Statistička analiza

Statistička analiza provedena je programom Statistical Package for Social Sciences (verzija 20.0, SPSS Inc., Chicago, Illinois, SAD). Normalnost distribucije podataka procijenjena je Kolmogorov-Smirnovljevim testom. Budući da je *p*-vrijednost bila $> 0,001$ za svaki element, zaključeno je da uzorak ima nenormalnu distribuciju pa su korišteni neparametrijski testovi u izračunu srednjih razlika (tj. Mann-Whitneyjev test).

Rezultati

U ovom istraživanju od 3306 pregledanih ispitanika, 77 (2,3%) je imalo hipodonciju. Budući da se istraživanje fokusiralo na pacijente s hipodoncijom, prezentirani su rezultati tih 77 identificiranih ispitanika. Od ukupnog broja ispitanika s hipodoncijom, 46 (59,7 %) je bilo djevojaka i 31 (40,3 %) mladić.

Nije bilo značajne razlike u prevalenciji hipodoncije u odnosu prema spolu ($p > 0,05$). Broj nedostajućih zuba kretao se od 1 do 5, s prosječnom vrijednošću od 1,8 po ispitaniku. Kod ispitanica je prosječna vrijednost iznosila 1,91, a kod ispitanika 1,89. Ni jednom ispitaniku nije nedostajalo više od pet zuba. Jedan zub nedostajao je kod 41,5 % ispitanika, dva kod 42,8 %, a od tri do pet zuba nije imalo 15,6 % pregledanih ispitanika. Veća prevalencija zapažena je kod ispitanika u dobi od 15 do 18 godina (59,8 %) u usporedbi s onima od 19 do 21 godine (40,2 %), što se može vidjeti u tablici 1.

Maksilarnu hipodonciju imalo je 46 (59,7 %) ispitanika, a mandibularnu 21 (27,3 %). Bimaksilarna hipodoncija zabilježena je kod 10 (13 %) ispitanika. Najčešće je nedostajao gornji lateralni inciziv, a nakon njega drugi donji premolar. Distribucija zuba koji nedostaju prikazana je na slici 1.

Uz hipodonciju, 68 ispitanika (88,3 %) imalo je još najmanje jednu kliničku značajku. Distribucija kliničkih karakteristika povezanih s hipodoncijom nalazi se u tablici 2. Najčešće je zabilježena rotacija zuba ($n = 35$, 45,5 %), s tim da je najčešće rotirani zub bio gornji desni centralni inciziv. Inklinacija je ustanovljena kod 36,4 % ($n = 28$) ispitanika – najčešće je bio inkliniran gornji desni lateralni inciziv. Sve opažene kliničke karakteristike imale su veću prevalenciju kod ispitanica u dobi od 15 do 18 godina. Distribucija i frekvencija kliničkih karakteristika povezanih s hipodoncijom prika-

Table 1 Number of missing teeth in patients with hypodontia
Tablica 1. Broj zuba koji nedostaju pacijentima s hipodoncijom

Number of missing teeth • Broj zuba koji nedostaje	Whole sample • Ukupno		15-18 year-old group • Skupina od 15 do 18 godina		19-21 year-old group • Skupina od 19 do 21 godinu	
	Prevalence n. (%) • Prevalencija broj (%)		Prevalence n. (%) • Prevalencija broj (%)		Prevalence n. (%) • Prevalencija broj (%)	
1	32 (41.6 %)	M = 12 F = 20	16 (20.8 %)	M = 4 F = 12	16 (20.7 %)	M = 6 F = 10
2	33 (42.6 %)	M = 17 F = 16	21 (27.3 %)	M = 11 F = 10	12 (15.6 %)	M = 6 F = 6
3	4 (5.2 %)	M = 1 F = 3	3 (3.9 %)	M = 1 F = 2	1 (1.3 %)	M = 0 F = 1
4	4 (5.2 %)	M = 1 F = 3	3 (3.9 %)	M = 1 F = 2	1 (1.3 %)	M = 0 F = 1
5	4 (5.2 %)	M = 2 F = 2	3 (3.9 %)	M = 2 F = 1	1 (1.3 %)	M = 0 F = 1
Total • Ukupno	77 (100 %)		46 (59.8 %)		31 (40.2 %)	

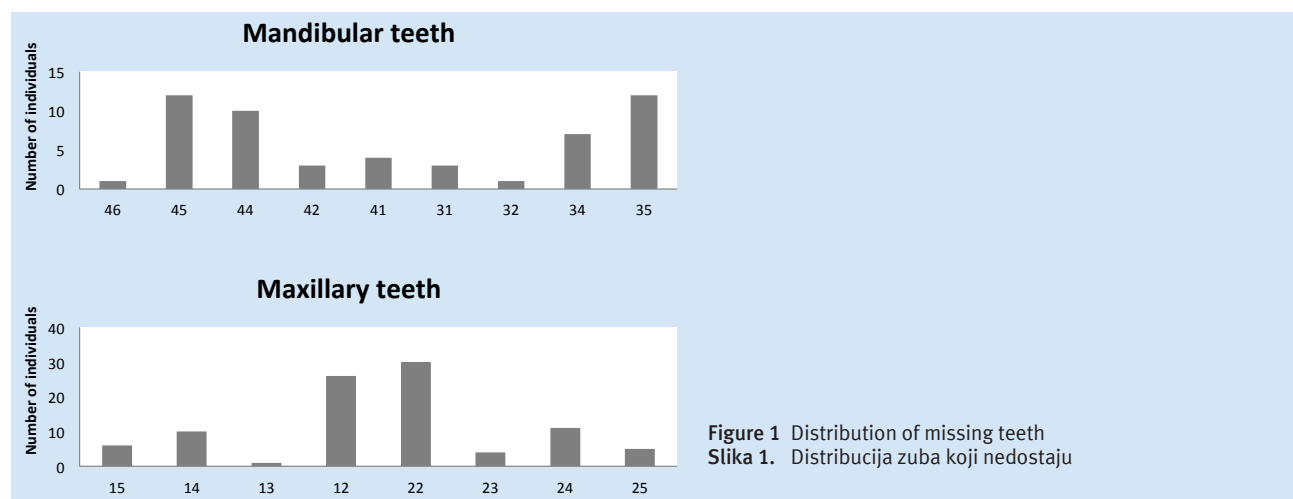


Table 2 Prevalence rate of different clinical features in the hypodontia sample according to different age groups.

Tablica 2. Stopa prevalencije različitih kliničkih karakteristika u uzorku s hipodoncijom u odnosu na različite dobne skupine

Anomaly • Anomalija	Whole Sample • Ukupno		15-18 year-old group • Skupina od 15 do 18 godina		19-21 year-old group • Skupina od 19 do 21 godine	
	Prevalence n. (%) • Prevalencija broj (%)	gender • spol	Prevalence n. (%) • Prevalencija broj (%)	gender • spol	Prevalence n. (%) • Prevalencija broj (%)	gender • spol
Midline shift upper jaw • Pomak sredine – gornja čeljust	11 (14,3 %)	M = 6 F = 5	9 (11,7 %)	M = 5 F = 4	2 (2,6 %)	M = 1 F = 1
Midline shift lower jaw • Pomak sredine – donja čeljust	16 (20,8 %)	M = 6 F = 10	13 (16,9 %)	M = 6 F = 7	3 (5,9 %)	M = 0 F = 3
Crossbite • Križni zagriz	12 (15,6 %)	M = 6 F = 6	8 (10,4 %)	M = 4 F = 4	4 (5,2 %)	M = 2 F = 2
Deep Bite • Duboki zagriz	16 (20,8 %)	M = 7 F = 9	13 (16,9 %)	M = 5 F = 8	3 (3,9 %)	M = 2 F = 1
Rotation • Rotacija	35 (45,5 %)	M = 12 F = 23	23 (29,9 %)	M = 8 F = 15	12 (15,6 %)	M = 4 F = 8
Inclination • Inklinacija	28 (36,4 %)	M = 10 F = 18	16 (20,8 %)	M = 6 F = 10	12 (15,6 %)	M = 4 F = 8
Microdontia • Mikrodoncija	4 (5,2 %)	M = 1 F = 3	4 (5,2 %)	M = 1 F = 3	0	M = 0 F = 0
Diastema • Dijastema	14 (18,2 %)	M = 7 F = 11	9 (11,7 %)	M = 6 F = 3	5 (6,5 %)	M = 1 F = 4

Table 3 Associations among different clinical features with corresponding p values, correlation coefficients, and 95% confidence interval
Tablica 3. Povezanost različitih kliničkih karakteristika s odgovarajućim p vrijednostima, korelacijskim koeficijentima i 95-postotnim intervalom pouzdanosti

	Midline shift upper jaw • Pomak sredine – gornja čeljust	Midline shift lower jaw • Pomak sredine – donja čeljust	Crossbite • Križni zagriz	Deepbite • Duboki zagriz	Rotation • Rotacija	Inclination • Inklinacija	Microdontia • Mikrodoncija	Diastema • Dijastema
Midline shift upper jaw • Pomak sredine – gornja čeljust	-	<i>P</i> < 0.01 .038 -.406 - (-.012)	.712 .600 -.248 - .205	.350 .299 -.252 - .153	.169 .251 -.225 - .110	.900 .812 -.173 - .163	.040 .397 -.211 - .525	.894 .947 -.206 - .221
Midline shift lower jaw • Pomak sredine – donja čeljust	-	-	.337 .654 -.203 - .321	.485 .715 -.278 - .192	<i>P</i> < 0.01 .188 -.320 - .064	.880 .940 -.187 - .202	<i>P</i> < 0.01 .286 -.196 - .653	.108 .466 -.156 - .336
Crossbite • Križni zagriz	-	-	-	.011 .253 -.086 - .322	.447 .705 -.199 - .135	.709 .853 -.152 - .184	.360 .600 -.475 - .276	.767 .884 -.200 - .232
Deep bite • Duboki zagriz	-	-	-	-	.094 .399 -.107 - .265	.018 .248 -.078 - .295	<i>P</i> < 0.01 .299 -.198 - .637	0.160 .434 -.336 - .146
Rotation • Rotacija	-	-	-	-	-	.030 < 0.001 -.626 - (-.205)	<i>P</i> < 0.01 .251 -.215 - .811	.416 .751 -.345 - .250
Inclination • Inklinacija	-	-	-	-	-	-	.807 .812 -.576 - .453	<i>P</i> < 0.01 .199 -.102 - .483
Microdontia • Mikrodoncija	-	-	-	-	-	-	-	.043 .339 -.068 - .195
Diastema • Dijastema	-	-	-	-	-	-	-	-

Spearman rank correlation coefficient. P value <0.05 is considered as significant • Koeficijent Spearmanova ranga korelacije; P-vrijednost < 0,05 određena je kao značajna

tients, aged 15-18 years. The distribution and frequency of clinical features related to hypodontia are presented in Table 2, segregated by gender and age group.

Significant associations (*P*<0.01) were noted among different dental clinical features in hypodontia patients, which is presented in Table 3.

Discussion

This study presented a condition of 2.3% of a total of 3,306 subjects examined in different schools and universities in Kosovo. All subjects included in the study had hypodontia, however, this sample has not necessarily represented those requesting orthodontic treatment. Likewise, this sample reflected only a portion of individuals with hypodontia in those group-ages. The present study provided insight and evidence on the gender-based prevalence of hypodontia and associated clinical features in a large proportion of Kosovar adolescents, previously not presented in any other studies. The findings of the present study revealed a higher prevalence of hypodontia among females compared to males, but with no statistically significant gender-based difference in its prevalence, which is in accordance with the studies of Gokkaya et. al (22) and Badrov (23).

zane su u tablici 2., a razdijeljene su prema spolu i dobnim skupinama.

Uočena je značajna povezanost između različitih kliničkih dentalnih karakteristika kod pacijenata s hipodoncijom (*P* < 0,01), što je prikazano u tablici 3.

Rasprava

Ovo istraživanje opisuje 2,3 % ukupnog broja (3306) pregledanih ispitanika u različitim školama i sveučilištima na Kosovu. Svi uključeni ispitanici imali su nedostatak zuba, no ovaj uzorak ne obuhvaća nužno one kojima je potrebno ortodontsko liječenje. Ovim uzorkom obuhvaćen je također samo dio ispitanika s hipodoncijom u navedenim dobnim skupinama.

Prikaz i dokazi o spolno utemeljenoj prevalenciji hipodoncije i povezanih kliničkih karakteristika u velikoj populaciji kosovskih adolescenata nisu do sada prikazani ni u jednom istraživanju. Predstavljani podatci pokazuju veću prevalenciju hipodoncije kod ženskih u odnosu prema muškim ispitanicima, no nije bilo statistički značajne razlike temeljene na spolu u prevalenciji, što potvrđuje nalaze u istraživanjima koja su objavili Gokkaya i suradnici (22) te Badrov (23).

There are many population-based and specific case reports published regarding hypodontia and its relation to other dental abnormalities. Japanese share similar prevalence of tooth agenesis with Europeans, however, the lower lateral incisor is the most commonly missing tooth, compared to the upper lateral incisor and second premolar in Europeans (6). Our study also revealed that more than 84 % of the adolescents had either one or two missing teeth. When observing the age groups, 15-18 year- old subjects had a higher prevalence of missing teeth comparing to 19-21 year- old subjects. The high percentage of subjects with only one or two missing teeth may reflect the influence of appearance, such as smile esthetics, on psycho-social level, thus motivating patients to seek orthodontic treatment. Another contributing factor to this phenomenon may be the finding that approximately 60 % of subjects had maxillary hypodontia, and 13 % of them had missing teeth in both jaws, potentially also affecting their smile esthetics.

Slightly higher prevalence of hypodontia and missing teeth was found among females, however, no statistically significant difference was found between the genders. The literature also contains few studies that found a significant gender-based difference (2,15,16).

Although many studies suggest that there is a correlation of hypodontia with several dental anomalies, including peg-shaped lateral incisors, canine- lateral incisor transposition, and taurodontism (2,14,17-21), our study found that above 88 % of the patients had at least one clinical feature apart from hypodontia. Tooth rotation was the most frequently noted clinical feature, with higher prevalence among females compared to males. In contrast, scant evidence regarding the gender predisposition of tooth rotation was found in the existing literature. Tooth inclination as a clinical feature was also observed in 36.4% of the patients, though a similar association has not been found in the recent literature.

One commonly reported feature associated with hypodontia is microdontia of one or more teeth. Our study found that only four patients (5.2%) had microdontia coexisting with hypodontia. The other most prevalent clinical features were mandibular midline shift and crossbite.

The analysis of correlations among anomalies also showed a higher prevalence of mandibular midline shift, rotation, inclination, and microdontia.

Although the sample was widely spread, this research study has the limitation of randomly leaving out regions with a higher prevalence of hypodontia. This limitation is mainly the result of the lack of national data on the prevalence of dental status of the population, including hypodontia.

Conclusion

No significant difference was noted in the prevalence of hypodontia according to gender. Tooth rotation was the most commonly observed clinical feature, followed by inclination. Hypodontia is regularly associated with other dental clinical features, therefore, a multidisciplinary approach is recommended to achieve maximal functional and esthetic results.

Objavljen je niz prikaza slučajeva o hipodonciji i njezinoj povezanosti s drugim dentalnim anomalijama. Europljani i Japanci, čini se, dijele sličnu prevalenciju ageneze zuba, no Japancima najčešće nedostaje donji lateralni inciziv, a Europljanima gornji lateralni inciziv (6). Ovo istraživanje pokazalo je da više od 84 % adolescenata nema jedan ili dva zuba. Kad je riječ o dobnim skupina, ispitanici u dobi od 15 do 18 godina imaju veću prevalenciju hipodoncije u odnosu prema onima od 19 do 21 godine. Kod velikog postotka ispitanika kojima nedostaju jedan ili dva zuba to bi moglo utjecati na izgled, ponajprije na osmijeh na psihosocijalnoj razini, što bi ih moglo motivirati da zatraže ortodontsku terapiju. Dodatni čimbenik koji tomu pogoduje jest nalaz da je gotovo 60 % ispitanika imalo maksilarnu hipodonciju, a 13 % bimaksilarnu, što je još jedan razlog koji može utjecati na estetiku osmijeha.

Ispitanice su imale blago veću prevalenciju hipodoncije i broj nedostajućih zuba, no nije bilo statistički značajne razlike između spolova. U literaturi također nema mnogo istraživanja koja su ustanovila takvu razliku (2, 15, 16).

Iako se u mnogim istraživanjima upozorava na povezanost hipodoncije s nekoliko dentalnih anomalija, uključujući konični oblik lateralnog inciziva, transpoziciju kanina i lateralnog inciziva te taurodontizam (2, 14, 17 – 21), u ovom je radu ustanovljeno da je više od 88 % ispitanih, uz hipodonciju, imalo još najmanje jednu kliničku karakteristiku. Najčešće je to bila rotacija, s većom prevalencijom kod djevojaka u usporedbi s mladićima. U literaturi je malo dokaza o spolnoj predispoziciji za rotaciju. Inklinacija zuba kao klinička karakteristika opažena je kod 36,4 % ispitanika, no u novijoj literaturi nije pronađena takva povezanost.

Jedna od često opisanih karakteristika povezanih s hipodoncijom jest mikrodoncija jednog ili više zuba. U našem istraživanju samo su četiri ispitanika (5,2 %), uz hipodonciju, imala mikrodonciju. Druge dvije najčešće kliničke karakteristike bile su pomak mandibularne sredine te križni zagriz.

Analiza korelacije između anomalija također je pokazala velik postotak u pomaku mandibularne sredine, rotaciju, inklinaciju te mikrodonciju.

Iako je uzorak značajno raspršen, ovo istraživanje ograničeno je zbog toga što nisu analizirana ona područja na kojima postoji veća prevalencija hipodoncije. To je ograničenje uglavnom rezultat nedostatka nacionalnih podataka o prevalenciji dentalnog statusa u populaciji, što uključuje i hipodonciju.

Zaključak

Nije opažena značajna razlika u prevalenciji hipodoncije u odnosu prema spolu. Rotacija zuba bila je najčešća klinička karakteristika, a slijedila je inklinacija. Hipodoncija je redovito povezana s drugim kliničkim dentalnim karakteristikama pa je potreban multidisciplinarni pristup kako bi se postigao maksimalni funkcijski i estetski rezultat.

Conflict of interest

The authors report no conflict of interest.

Sukob interesa

Autori nisu bili u sukobu interesa.

Sažetak

Cilj: U ovom istraživanju primarno se željelo procijeniti razlike između ispitanika s hipodoncijom na temelju spola. Sekundarno se proučavala korelacija između hipodoncije i drugih kliničkih dentalnih obilježja kosovskih adolescenata. **Materijal i metode:** U školama diljem Kosova pregledano je 3306 učenika i studenata u dobi od 15 do 21 godine. Pregledi su obavljani dentalnim zrcalom, a bilježio se broj prisutnih zuba. Ispitanicima s hipodoncijom uzeti su otisci. Svim pacijentima za koje je postojala sumnja na hipodonciju učinjene su panoramska i periapikalne rendgenske snimke te intraoralne fotografije kako bi se potvrdila dijagnoza. **Rezultati:** Hipodonciju je imalo 77 ispitanika – 46 djevojkama (59,7 %) i 31 mladić (40,3 %). Najčešće im je nedostajao gornji lateralni inciziv, a nakon njega drugi donji premolar. Još jedna klinička karakteristika, uz hipodonciju, zabilježena kod najmanje 68 pacijenata (88,3 %). **Zaključak:** Nije bilo značajne razlike u prevalenciji hipodoncije s obzirom na spol. Najčešća klinička dentalna značajka bila je rotacija zuba, a slijedi je inklinacija.

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