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# Oral Health in Children with Hearing and Speech Impairment in Banjaluka

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## SUMMARY

**Introduction** Children with hearing impairment do not understand speech without specific instructions and cannot meet daily life requirements. Children with hearing and speech impairment have higher DMFT index and poorer oral hygiene than healthy children of the same age. The aim of this study was to determine oral health status and the prevalence of dental caries in children attending The Center for Education and Rehabilitation of Speech and Hearing in Banjaluka.

**Material and Methods** The study was conducted as a cross-sectional study and it included 66 children of both genders, age 3 to 18 years, with deciduous, mixed and permanent dentition. General information about the respondents, their socioeconomic status, dental hygiene habits and frequency of dental visits were obtained using a questionnaire. Dental examination was performed using a dental mirror, regular and proximal probe on the daylight, in accordance with World Health Organization guidelines. Oral examination included: number of present teeth, presence of caries, restorations, number of extracted teeth. These data was entered in each patient's dental record. The DMFT index was used for the assessment of dental status.

**Results** Results showed that the mean DMFT value in the total sample was 7.79. There was no significant difference in the DMFT index between genders ( $p=0.19$ ). The significant difference was not found between children who live with parents and those who live in foster families ( $p=0.15$ ). It was observed that the respondents from rural areas had higher DMFT index (8.68) than respondents from urban areas (5.83). The DMFT index increased with age and school age ( $p<0.001$ ). Examined patients were most affected with dental caries (6.62%) and least affected with extracted teeth (0.38%). It was revealed that 6% of respondents do not brush their teeth, and 25.8% of respondents had never visited dentist.

**Conclusion** Children with hearing and speech impairment from Banjaluka have low level of oral health. The DMFT index, as one of the most important parameters of oral health in these children was much higher compared to European countries and other countries in the region.

**Keywords:** caries; children; disability; hearing impairment; speech impairment

## INTRODUCTION

Oral health includes health of mouth, jaws, teeth, throat, and related tissues. This fact points out the great importance of oral health in everyday life [1]. The American Academy of Pediatric Dentistry (AAPD) has enabled primary and comprehensive preventive and therapeutic health care for persons with disabilities as an integral part of training in pediatric dentistry. This aims to provide the best possible care to every person, including those with special needs. AAPD defines special needs as "any physical, developmental, mental, sensory, behavioral, cog-

nitive, or emotional disorder or restriction that requires medical recruitment, medical interventions, and/or use of specialized services and programs. The condition may be congenital or acquired and may cause limitations in daily activities. Providing health care for people with special needs requires specialized knowledge, increased attention and adaptation to conditions that deviate from planned routine" [2].

People with disabilities have increased risk for the occurrence of oral diseases. Particularly vulnerable patients to develop these diseases are patients with special needs or physical disabilities who neither possess ability

to understand the importance of maintaining oral health nor responsibility to take preventive actions [3].

A child with a hearing impairment can neither hear well (even with a hearing aid) nor understand speech without specific instructions. Such child cannot respond to current life demands. There are two types of hearing loss: congenital and acquired (caused by diseases) [4]. Hearing impairment is often associated with speech disorders [5].

A dentist who is dealing with a child with hearing and speech impairment must change usual therapeutic approach and involve parents or guardians during examination. Also, interventions must be implemented carefully because it is a child with special needs and requirements [6]. When applying local anesthesia a dentist must be absolutely sure that the treated area is numbed before he/she starts the procedure. Cases in which incomplete anesthesia during restorative procedures caused regressive behavior of children and they felt betrayed have been reported. Also, when performing an intervention in children with hearing loss dentist should take care not to obstruct patients' eyes with any device or objects because then their only way to communicate (eyes) is affected which can cause restless behaviour. Hyperactive and anxious children sometimes need preoperative medication. General anesthesia is recommended in cases where other therapy cannot be successfully applied [6].

According to the World Health Organization (WHO), 60-90% of healthy school children worldwide have caries lesions [7]. The DMFT index in healthy children in USA is relatively high (3.0), in Europe it is 2.6, while the lowest value is found in African countries – 1.7 [8]. In Croatia, the DMFT index in healthy children is very high (6.67) [9].

Brown and Shodel [10] analyzed 32 studies about children with special needs and they found out that these children had poorer oral hygiene than healthy children of their age. The study of Jain et al. [11] revealed that children with hearing and speech impairment that attend special schools had poor oral hygiene and increased need for dental treatment. The mean DMFT in these children was 2.61. As very few data about oral health in children with hearing and speech impairment is available both in the world and in our country, there was a need for research in depth in this area.

The aim of this study was to assess oral health status and the prevalence of dental caries in children with hearing and speech impairment attending The Center for Education and Rehabilitation of Speech and Hearing in Banjaluka.

## MATERIAL AND METHODS

The study was conducted as a cross-sectional study from January to April 2010 and it included 66 children of both genders, aged 3-18 years.

General information about the respondents, socioeconomic status, dental hygiene habits and frequency of dental visits were obtained using a questionnaire [12]. Dental examination was performed using dental mirror,

regular and proximal probe on the daylight in accordance with WHO guidelines [13]. Oral examination included: number of teeth, presence of caries, restorations and number of extracted teeth. Acquired data was entered in the dental records for each patient. For the assessment of dental status, the DMFT (decayed, missing, filled) index was used. All parents/guardians were explained the purpose of the study and they signed informed consent for the participation in research.

Statistical analysis was performed using SPSS 15.0 (frequency distribution, ANOVA, t-test). The value  $p < 0.05$  was considered statistically significant.

## RESULTS

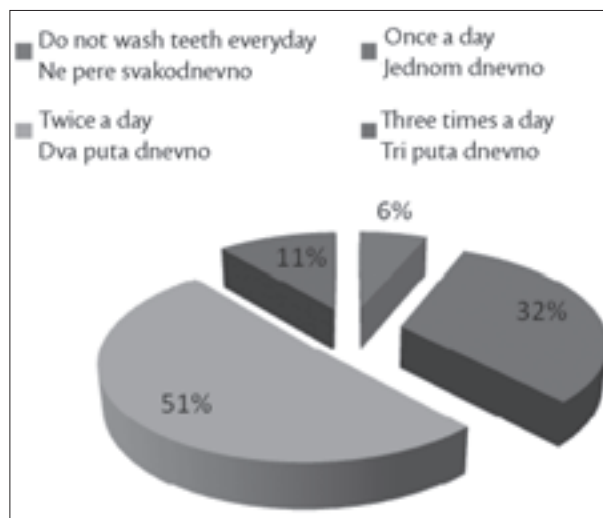
The study included 36 boys (54.55%) and 30 girls (45.45%). The average age was 10.65 years (SD 4.75). In this study the presence of deciduous, mixed and permanent dentition was identified (Table 1).

Seven children responded that they brush their teeth three times a day or more, 34 twice a day, 21 brush their teeth once a day and 4 of respondents do not brush their teeth at all (Graph 1).

Graph 2 shows dental visits and 25.8% of children with hearing and speech impairment reported not even a single

**Table 1.** Respondents and dentition in examined sample  
**Tabela 1.** Ispitanici i vrsta denticije u ispitivanom uzorku

Dentition Denticija	Number of respondents (%) Broj ispitanika (%)		
	Total Ukupno	Boys Dečaci	Girls Devojčice
Deciduous Mlečna	11 (16.7)	5 (13.9)	6 (20.0)
Mixed Mešovita	19 (28.8)	11 (30.6)	8 (26.7)
Permanent Stalna	36 (54.5)	20 (55.6)	16 (53.3)
Total Ukupno	66 (100.0)	36 (100.0)	30 (100.0)



**Figure 1.** Frequency of brushing teeth  
**Grafikon 1.** Učestalost pranja zuba

dental visit while 21.2% of children had not visited dentist in the past year.

Table 2 shows the correlation between the DMFT index and gender, the living environment, who do they live with, and the age of respondents. The average DMFT value of the total sample was 7.79 (SD 4.87). Male respondents had higher DMFT index (8.50) than female (6.93), but the difference was not statistically significant ( $p=0.19$ ). Respondents from rural areas had higher values of the DMFT index (8.68) than those living in urban areas (7.13), also with no statistically significant difference ( $p=0.20$ ). Children who live with their parents had lower DMFT index (7.10) than children who live with foster family (9.65) or in an institution (9.50), but this difference was not statistically significant ( $p=0.15$ ). The DMFT index increased with age and school age ( $p<0.001$ ).

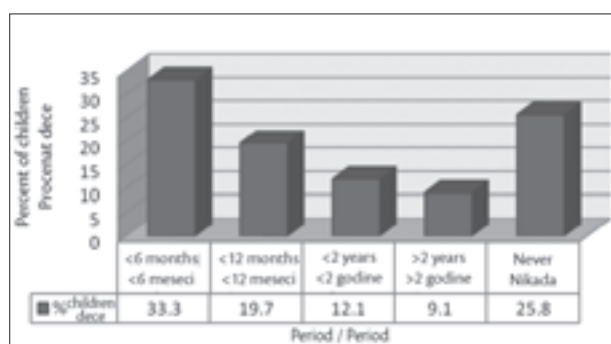


Figure 2. Last dental visit of respondents

Grafikon 2. Raspodela ispitanika prema poslednjoj poseti stomatologu

Graph 3 shows the relationship between the DMFT index and the type of dentition. This index is increasing with the appearance of permanent teeth. In deciduous teeth, the dmft index had the lowest value (4.18), while in mixed dentition it was 7.95. The highest value of this index was in children with permanent teeth (8.81).

## DISCUSSION

People with special needs experience difficulties in using dental services; therefore, they rarely visit a dentist. There are three types of barriers they encounter when using dental services. The first barrier are themselves, the other barrier is dentist that provides these services, and the third one are state programs for oral health maintenance

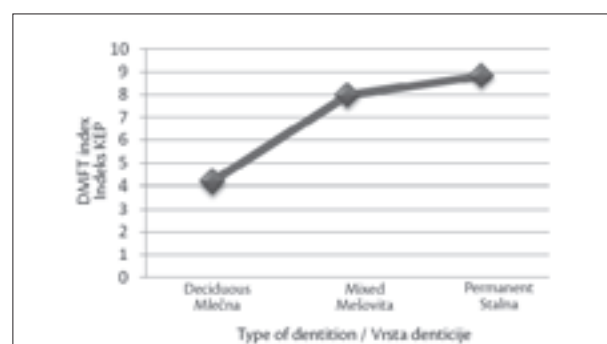


Figure 3. DMFT index and types of dentition in examined children

Grafikon 3. Povezanost vrednosti indeksa KEP i vrste denticije kod ispitivane dece

Table 2. DMFT index in children with hearing and speech disorders in relation to gender, environment they live in and whom they live with  
Tabela 2. Vrednosti indeksa KEP kod dece s poremećajem sluha i govora u odnosu na pol, uzrast, sredinu u kojoj žive i sa kim žive

Variable / Varijabla		Number of respondents (%) / Broj ispitanika (%)	Mean value (SD) / Srednja vrednost (SD)				P
			DMFT index / Indeks KEP	Caries / Karijes	Extracted teeth / Ekstrahovani zubi	Filled teeth / Plombirani zubi	
Gender / Pol	Male / Muški	36 (54.50)	8.50 (4.87)	7.22 (4.59)	0.44 (1.10)	0.83 (1.40)	0.19
	Female / Ženski	30 (45.50)	6.93 (4.57)	6.03 (4.26)	0.33 (0.71)	0.57 (1.10)	
Environment / Sredina	Urban / Grad	38 (57.57)	7.13 (4.89)	5.83 (4.48)	0.37 (0.82)	0.87 (1.46)	0.20
	Rural / Selo	28 (42.43)	8.68 (4.52)	7.75 (4.26)	0.43 (1.10)	0.50 (0.96)	
Live with* / S kim živi*	With parents / Sa roditeljima	46 (70.77)	7.10 (4.85)	6.30 (4.46)	0.35 (0.82)	0.46 (1.09)	0.15
	Foster family / Hraniteljska porodica	17 (26.15)	9.65 (4.36)	7.65 (4.70)	0.59 (1.28)	1.41 (1.54)	
	Institution / Kolektiv	2 (3.08)	9.50 (3.54)	8.50 (2.12)	0	1.00 (1.41)	
Age / Uzrast	Preschool / Predškolski	12 (18.18)	4.67 (5.66)	4.67 (5.67)	0	0	<0.001
	Primary / Osnovna škola	41 (62.12)	7.56 (4.15)	6.56 (4.09)	0.37 (0.86)	0.61 (1.20)	
	High / Srednja škola	13 (19.70)	11.38 (3.47)	8.92 (3.54)	0.85 (1.41)	1.69 (1.55)	
Total / Ukupno		66 (100.00)	7.79 (4.76)	6.68 (4.45)	0.39 (0.94)	0.71 (1.27)	

\* missing data for one subject

p – level of statistical significance (t-test; ANOVA)

\* nedostaje podatak za jednog ispitanika

p – nivo statističke značajnosti (t-test; ANOVA)

in people with special needs [14]. In the study from UK it was shown that 63% of children with hearing impairment had at least one problem in communication during dental visit [15]. The severity of this problem increased with the severity of hearing loss. About two-thirds of children (62%) stated that dentists have worn protective masks when communicating with them. The same study showed that 69% of children used sign language or some form of oral communication. These children required a quiet environment free of background noise and a good view of the speaker's face. The dentist has to put a mask during the examination, but it is recommended to take off the mask while talking to these children so they can read from lips. It is necessary that dentist inquires how that child communicates, and to respect the way of communication as much as possible. This points out the important role of parents at each dental examination [15].

One major study that assessed oral health in institutionalized children with special needs showed increased prevalence of poor oral health among these children compared to healthy children, and worsen situation with age [1]. In addition to communication problems, children with hearing loss often have xerostomia (dry mouth) because they breathe through the mouth and therefore increased risk of dental caries and periodontal infections [15, 16]. People with long-term xerostomia are susceptible to cervical and root caries as well as gingivitis. Fluoride gels with high concentrations of fluoride, available on the market, can reduce the risk of developing these conditions. However, in these cases the priority is given to oral hygiene and teeth brushing. These patients need more close checkups for their oral hygiene monitoring [17].

Our study showed lower level of oral hygiene in children with hearing and speech impairment compared to healthy adolescents similarly to the study performed in 2007 in Croatia [18]. About 51% of examined children in the current study, nearly 70% of healthy children in Croatia and almost 93% in Bosnia and Herzegovina, as shown in the study from 2012, brushed their teeth twice a day [18, 19]. Compared to 66% adolescents in Croatia who have seen dentist within one year [18] in Bosnia and Herzegovina nearly 73% have visited dentist regularly [19]. In the current study only 33.3% of children have seen a dentist in the past 6 months. 26% of children with hearing and speech impairment have never visited dentist compared to healthy children (about 13%) [19].

The DMFT in children with hearing and speech impairment was 8.5 in males and 6.93 in females, but no statistically significant difference between these two groups was found. The results of the current study significantly differ from results obtained in other countries: DMFT index of healthy children in US was 3.0, in Europe 2.6, while the lowest index was found in African countries (1.7) [8]. In Croatia, the DMFT index in children is very high (6.67) [9]. A study conducted among children with special needs in Banjaluka (Bosnia and Herzegovina) including children age 5-15 years with neurological disorders without mental retardation, mild and moderate mental retardation showed high DMFT index (9.77) among these children [20]. Jain et al. [11] reported

the average DMFT index of 2.61 in children with hearing impairment, whereas that value increased with age of children. The lowest DMFT index was found in preschool children (4.67), slightly higher value in children attending primary school (7.58), while in high school it was the highest (11.38). This can be explained by changes in their lifestyle and diet [11]. One Brazilian study showed that the incidence of proximal lesions in twelve year old children can be decreased with appropriate diet and oral hygiene [21]. For better oral health it is recommended to reduce intake of refined carbohydrates [22].

In the current study, correlation was observed between the DMFT index and types of dentition, with the lowest index value in primary teeth (4.18). The DMFT index in mixed dentition was 7.95, and in permanent 8.81. Other studies showed lower values of this index. In Croatia in 2007, a study was conducted in children with special needs, including children with cerebral palsy, mental retardation, Down syndrome, autism and hearing and speech impairment, age 3-17 years. In that study the DMFT index in these children was 3.42 in deciduous and 5.24 in mixed dentition, while in healthy children it was 1.43 for deciduous and 5.1 for mixed dentition [23]. Children older than 6 years can independently brush their teeth. In relation to their physical and psychological disability, they are in greater risk of caries. According to the WHO data, more than 60% of European countries have achieved the target maximum value of the DMFT index (3) at twelve years of age. Others, including Baltic countries still have high levels of the DMFT index [23, 24].

There was no significant correlation between the DMFT index and the environment in which children live (town or village), or with whom they live (parents, foster care or collective).

DMFT index as main indicator of the status of teeth indicated poor dental health in children with hearing and speech impairment. Although they are physically able to maintain dental hygiene, the main obstacle is communication. Often, by mistake, hearing loss is associated with learning disabilities, and treated as such. In addition, these patients feel that medical personnel are compassionated, so they avoid dental visits putting their oral health at risk [25].

## CONCLUSION

Children with hearing and speech impairment attending "The center for education and rehabilitation of speech and hearing" in Banjaluka showed low level of oral health. The DMFT index in these children, as one of the most important parameters of oral health was higher than in other European countries and countries in the region. These children should have adequate dental care with trained professionals provided. Also, it is necessary to educate children how to maintain oral hygiene involving parents, guardians and institutions in the health care program. The most optimal solution for this population would be establishment of dental offices within the institution in which children with hearing and speech impairment



reside (school or collectives in which they live). In these clinics dentists could educate them about oral hygiene in order to improve their oral health.

## NOTE

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# Stanje oralnog zdravlja dece s oštećenim sluhom i govorom u Banjaluci

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## KRATAK SADRŽAJ

**Uvod** Deca sa oštećenim sluhom ne razumeju govor bez posebnih instrukcija, te ne mogu da odgovore na svakodnevne zahteve života. Vrednosti indeksa KEP su kod dece s oštećenim sluhom i govorom veće u poređenju sa zdravom decom istog uzrasta, a i lošije održavaju oralnu higijenu nego zdrava deca. Cilj istraživanja je bio da se utvrde stanje zdravlja usta i zuba i prevalencija karijesa kod dece koja pohađaju Centar za obrazovanje i vaspitanje i rehabilitaciju govora i slušanja u Banjaluci.

**Materijal i metode rada** Istraživanje je izvedeno kao studija preseka, a obuhvatilo je 66 dece oba pola, uzrasta od tri godine do 18 godina, sa mlečnom, mešovitim i stalnom denticijom. Opšti podaci o ispitanicima, njihovom socioekonomskom statusu, navikama održavanja higijene zuba i učestalosti poseta stomatologu dobijeni su upitnikom. Stomatološki pregled je obavljen pomoću stomatološkog ogledalceta, stomatološke prave i aproksimalne sonde pri dnevnoj svetlosti u skladu s uputstvom Svetske zdravstvene organizacije. Stomatološkim pregledom su utvrđeni: broj zuba, postojanje karijesa, postojanje ispuna i broj izvađenih zuba. Ovi podaci su upisani u stomatološke kartone svakog deteta. Za procenu stanja zuba korišćen je indeks KEP.

**Rezultati** Analiza dobijenih rezultata je pokazala da je srednja vrednost indeksa KEP u ukupnom uzorku bila 7,79. Razlika vrednosti indeksa KEP između polova nije bila statistički značajna ( $p=0,19$ ), kao ni između dece koja žive s roditeljima i one koja su u hraniteljskim porodicama ( $p=0,15$ ). Kod ispitanika iz ruralne sredine zabeležena je veća vrednost indeksa KEP (8,68) u odnosu na ispitanike koji žive u gradu (5,83). U pogledu uzrasta dece, utvrđeno je da se vrednost indeksa KEP povećavala sa godinama starosti i školskim uzrastom ( $p<0,001$ ). Kod svih ispitanika bilo je najviše zuba zahvaćenih karijesom (6,62%), a najmanje izvađenih zuba (0,38%). Analizom odgovora iz upitnika utvrđeno je da 6% ispitanika uopšte ne pere zube, a da 25,8% ispitanika nikada nije bilo kod zubara.

**Zaključak** Deca s oštećenjem sluha i govora u Banjaluci vrlo su lošeg oralnog zdravlja. Indeks KEP, koji je jedan od najvažnijih parametara zdravlja usta i zuba, kod ove dece je mnogo viši u odnosu na decu iz ostalih evropskih zemalja, ali i iz zemalja u regionu.

**Ključne reči:** karijes; deca; posebne potrebe; oštećenje sluha; oštećenje govora

## UVOD

Oralno zdravlje obuhvata zdravlje usta, vilice, zuba, grla i pripadajućih tkiva. Ta činjenica ukazuje na veliki značaj zdravlja ovih organa u svakodnevnom životu [1]. Američka akademija pedijatrijske stomatologije (*American Academy of Pediatric Dentistry – AAPD*) omogućila je da primarna i obimna preventivna i terapijska zdravstvena zaštita osoba s posebnim potrebama bude integralni deo specijalizacije iz dečje stomatologije. Time se nastoji obezbediti najbolja moguća nega svakoj osobi, pa i osobama s posebnim potrebama. AAPD definiše posebne potrebe kao „bilo koji fizički, razvojni, mentalni, senzorni, bihevioralni, kognitivni ili emocionalni poremećaj ili ograničenje koje zahteva medicinsko angažovanje, zdravstvene intervencije i/ili upotrebu specijalizovanih usluga ili programa. Stanje može biti urođeno ili stečeno, a može izazvati ograničenja u svakodnevnom aktivnostima. Zdravstvena zaštita osoba s posebnim potrebama zahteva specijalizovana znanja, povećanu pažnju, prilagođavanje stanju koje odstupa od predviđene rutine.“ [2]

Kod osoba s posebnim potrebama povećan je rizik od bolesti oralnog aparata. Nastanku ovih bolesti naročito su podložni pacijenti s posebnim potrebama ili fizičkim nedostacima koji nisu sposobni da razumeju značaj održavanja higijene usta i zuba, niti da preduzmu odgovornost za preventivno delovanje u očuvanju svoga zdravlja [3].

Dete s oštećenjem sluha je ono koje nema dovoljno dobar sluh (čak i sa slušnim aparatom) da razume govor bez posebnih instrukcija. Takvom detetu čulo sluha ne može da odgovori na svakodnevne zahteve života. Postoje dva tipa oštećenja sluha: kongenitalno (urođeno) i stečeno (uzrokovano nekim bolestima) [4]. Oštećenje sluha je često udruženo s poremećajem govora [5].

Stomatolog koji je svestan zavisnosti deteta s oštećenim sluhom i govorom od roditelja (staratelja) mora promeniti svoj uobičajeni terapijski pristup, te odmah pri pregledu uključiti i roditelje u čitav proces. Intervencije se moraju realizovati pažljivo s obzirom na to da je u pitanju dete s posebnim potrebama i zahtevima [6]. Pri primeni lokalne anestezije stomatolog mora biti potpuno siguran da je ona delovala pre nego što počne sa drugim procedurama. Zabeleženi su i slučajevi u kojima je nepotpuna anestezija pri restaurativnim zahvatima dovela do regresije u ponašanju tog deteta, pri čemu se ono osetilo izdanim, što je na kraju dovelo i do otežane saradnje s njim. Prilikom izvođenja intervencija kod dece s oštećenjem sluha stomatolog treba da vodi računa o tome da pacijentove oči ne budu zaklonjene nekim aparatom ili predmetom, jer je tada jedino sredstvo komunikacije s okolinom (oči) ugroženo, te to kod deteta može izazvati burnu reakciju. Kod hiperaktive i vrlo nervozne dece nekada je neophodno posegnuti za premedikacijom. Opšta anestezija se preporučuje kada se drugi oblici lečenja pokažu neuspešnim [6].

Prema podacima Svetske zdravstvene organizacije (SZO), 60–90% zdrave dece školskog uzrasta širom sveta ima karijes [7]. Vrednost indeksa KEP kod zdrave dece u Sjedinjenim Američkim Državama je relativno visoka i iznosi 3,0, u Evropi je 2,6, dok je najniža u afričkim zemljama – 1,7 [8]. U Hrvatskoj je vrednost indeksa KEP kod zdrave dece vrlo visok (6,67) [9].

Braun (*Brown*) i Šodel (*Shodel*) [10] su analizirali 32 studije dece s posebnim potrebama i pokazalo se da takva deca lošije održavaju higijenu usta u odnosu na drugu decu istog uzrasta. Studija Džejna (*Jain*) i saradnika [11] je pokazala da je kod dece s oštećenjem sluha i govora koja su pohađala specijalnu školu oralna higijena loša, te da je povećana i potreba za stomatološkim intervencijama. Srednja vrednost indeksa KEP kod te dece bila je 2,61. Kako je vrlo malo podataka o oralnom zdravlju dece s oštećenjem sluha i govora u svetu, pa i kod nas, javila se potreba za istraživanjem u ovoj oblasti.

Cilj rada je bio da se provere stanje zuba i prevalencija karijesa kod dece s oštećenjem sluha i govora koja pohađaju Centar za obrazovanje i vaspitanje i rehabilitaciju govora i slušanja u Banjaluci.

## MATERIJAL I METODE RADA

Istraživanje je izvedeno kao studija preseka od januara do aprila 2010. godine, a obuhvatilo je 66 dece oba pola, uzrasta od tri godine do 18 godina.

Opšti podaci o ispitanicima, njihovom socioekonomskom statusu, navikama održavanja higijene zuba i usta i učestalosti poseta stomatologu dobijeni su upitnikom [12]. Stomatološki pregled je obavljen pomoću stomatološkog ogledalceta, stomatološke prave i aproksimalne sonde pri dnevnoj svetlosti u skladu s uputstvom SZO [13]. Stomatološkim pregledom su utvrđeni: broj zuba, postojanje karijesa, postojanje ispuna i broj izvađenih zuba. Dobijeni podaci su upisani u stomatološke kartone svakog deteta. Za procenu stanja zuba korišćen je indeks KEP (K – zub zahvaćen karijesom; E – ekstrahovan zub; P – plombiran zub). Svi roditelji (staratelji) upoznati su sa svrhom istraživanja i svojim potpisom su potvrdili dobrovoljni pristanak za učešće dece u studiji.

Statistička obrada podataka je vršena u programu SPSS 15.0 (distribucije frekvencije, ANOVA, Studentov t-test). Statistički značajnom smatrala se vrednost  $p < 0,05$ .

## REZULTATI

Studijom je obuhvaćeno 36 dečaka (54,55%) i 30 devojčica (45,45%) prosečnog uzrasta od 10,65 godina ( $SD=4,75$  godina). Kod ispitanika utvrđene su mlečna, mešovita i stalna denticija (Tabela 1).

Na pitanje o navici pranja zuba, sedam ispitanika je odgovorilo da zube pere najmanje tri puta dnevno, 34 je reklo da ih pere dva puta dnevno, 21 ispitanik je naveo da zube pere samo jednom dnevno, dok su četiri ispitanika odgovorila da nikada ne peru zube (Grafikon 1).

Na grafikonu 2 prikazana je poslednja poseta stomatologu, gde se uočava da čak 25,8% dece s oštećenjem sluha i govora nikada nije bilo kod zubara i da 21,2% dece nije bilo kod stomatologa u poslednjih godinu dana.

U tabeli 2 je predstavljena povezanost vrednosti indeksa KEP i pola ispitanika, sredine u kojoj žive, s kim žive i uzrasta ispitanika. Prosečna vrednost indeksa KEP u ukupnom uzorku bila je 7,79 ( $SD=4,87$ ). Više vrednosti indeksa KEP zabeležene su kod ispitanika muškog pola (8,50) u odnosu na ispitanice (6,93), ali razlika nije bila statistički značajna ( $p=0,19$ ), kao i kod ispitanika koji žive u ruralnoj sredini (8,68) u odnosu na one koji žive u gradu (7,13), takođe bez statistički značajne razlike ( $p=0,20$ ). Utvrđeno je i da deca koja žive s roditeljima imaju nižu vrednost indeksa KEP (7,10) od dece koja žive u hraniteljskoj porodici (9,65) ili u kolektivu (9,50), ali ova razlika nije bila statistički značajna ( $p=0,15$ ). Kada je analiziran odnos uzrasta dece i vrednosti indeksa KEP, utvrđeno je da se ona povećavala sa godinama starosti i školskim uzrastom ( $p < 0,001$ ).

Grafikon 3 prikazuje odnos indeksa KEP i vrste denticije. Uočava se da se vrednost indeksa povećava sa pojavom stalnih zuba. Kod mlečnih zuba indeks KEP je imao najnižu vrednost (4,18), dok je u mešovitoj denticiji njegova vrednost bila nešto viša (7,95). Najviša vrednost je zabeležena kod dece koja su imala stalne zube (8,81).

## DISKUSIJA

Osobama s posebnim potrebama otežano je korišćenje stomatoloških usluga, te one retko posećuju zubara. Postoje tri vrste prepreka na koje nailaze prilikom korišćenja stomatoloških usluga. Prvu barijeru predstavljaju oni sami, drugu čine stomatolozi koji pružaju te usluge, a treću državni programi za održavanje oralnog zdravlja ovih osoba [14]. U Velikoj Britaniji je urađena studija koja je pokazala da je 63% dece s oštećenjem sluha imalo bar jedan problem u komunikaciji prilikom posete stomatologu i da se težina tog problema povećava sa težinom oštećenja sluha [15]. Oko dve trećine dece (62%) je izjavilo da je stomatolog nosio masku pri komunikaciji s njima. Ista studija je pokazala da se 69% dece služi jezikom znakova ili nekim oblikom usmene komunikacije. Takva deca zahtevaju tišu sredinu, bez pozadinskih zvukova, i dobar pogled na lice govornika. Stomatolog mora da nosi masku tokom pregleda, ali je dovoljno da je skinje prilikom obraćanja detetu, kako bi ono moglo da čita s usana. Pri pregledu neophodno je da se stomatolog raspita na koji način dete komunicira, te da poštuje takav način saradnje koliko je to moguće. To ukazuje na veliku ulogu roditelja pri svakom pregledu kod zubara [15].

Jedna od većih studija koja je ispitivala oralno zdravlje dece s posebnim potrebama koja su smeštena u posebne ustanove pokazala je da je povećana prevalencija lošeg zdravlja usta i zuba takve dece u odnosu na zdravu decu, te da se situacija pogoršava sa uzrastom [1]. Osim problema u komunikaciji, deca s oštećenjem sluha često imaju kserostomiju (suvoća usta) jer dišu na usta, a time i povećan rizik od pojave karijesa i periodontalnih infekcija [15, 16]. Osobe sa dugotrajnom kserostomijom podložne su nastanku karijesa zubnog vrata i korena, te gingivitisu. Fluoridni gelovi s visokom koncentracijom fluorida koji se mogu naći na tržištu smanjuju rizik od pojave ovih stanja. Ipak, prednost se u takvim slučajevima daje savetima o održavanju higijene usta i zuba i načinima čišćenja zuba. Takvi pacijenti se moraju češće javljati na kontrolne preglede, da bi se pratilo kako održavaju higijenu usne duplje [17].

Naše istraživanje je pokazalo da su higijenske navike pranja zuba kod dece s oštećenjem sluha i govora na nižem nivou u

odnosu na podatke istraživanja koje je 2007. godine urađeno na zdravim adolescentima u Hrvatskoj [18]. Naime, rezultati naše studije su pokazali da 51% dece zube pere dva puta dnevno, dok je u Hrvatskoj to činilo skoro 70% zdrave dece [18], a u Bosni i Hercegovini 2012. godine 93% [19]. U poređenju sa 66% hrvatskih adolescenata koji su kod stomatologa bili u proteklih godinu dana [18], u Bosni i Hercegovini njih skoro 73% redovno ide kod zubara [19], dok je u našem istraživanju pokazano da je samo trećina dece bila kod stomatologa u poslednjih šest meseci. Stomatologa nikad nije posetilo 26% dece s oštećenjem sluha i govora, što je skoro duplo više u odnosu na zdravu decu (oko 13%) [19].

Indeks KEP dece s oštećenjem sluha i govora bio je 8,5 kod ispitanika muškog pola, a 6,93 kod ženskog, ali ova razlika između dve posmatrane grupe nije bila statistički značajna. Rezultati studije znatno odstupaju od nalaza u nekim drugim zemljama: tako je, na primer, vrednost indeksa KEP zdrave dece u SAD bila 3,0, u Evropi 2,6, a u afričkim zemljama 1,7 [8]. Kod dece u Hrvatskoj vrednost indeksa KEP je bila vrlo visoka – 6,67 [9]. U Banjaluci je urađeno istraživanje koje je obuhvatilo decu s posebnim potrebama uzrasta 5–15 godina koja su imala neurološke poremećaje bez mentalne retardacije i decu koja su imala blagu ili umerenu mentalnu retardaciju. Rezultati studije su pokazali visok indeks KEP, čija je vrednost bila 9,77 [20]. Džejn i saradnici [11] su kod dece s oštećenjem sluha izračunali prosečnu vrednost indeksa KEP od 2,61, koja se sa uzrastom dece povećavala. I u studiji urađenoj na deci s oštećenjem sluha i govora utvrđena je statistički značajna povezanost uzrasta dece i porasta vrednosti indeksa KEP. Najniža vrednost je bila kod dece predškolskog uzrasta (4,67), nešto veća kod dece koja su pohađala osnovnu školu (7,58), dok je kod srednjoškolaca bila najviša (11,38). To se objašnjava promenama načina života i ishrane [11]. Istraživanje brazilskih autora je pokazalo da se incidencija aproksimalnih lezija kod dvanaestogodišnjaka može smanjiti odgovarajućom ishranom i oralnom higijenom [21]. Za poboljšanje oralnog zdravlja preporučuje se smanjeni unos rafiniranih ugljenih hidrata u dnevnim obrocima [22].

U našem istraživanju uočena je povezanost indeksa KEP i vrste denticije, pri čemu je vrednost ovog indeksa bila najniža kod mlečnih zuba (4,18). Kod mešovite denticije ona je bila 7,95, a kod stalne 8,81. Rezultati drugih studija pokazuju niže vrednosti ovog indeksa. U Hrvatskoj je 2007. urađeno istraživanje na deci s posebnim potrebama, koje je obuhvatilo decu s cerebralnom paralizom, mentalnom retardacijom, Daunovim sindromom, autizmom i oštećenjem sluha i govora, uzrasta 3–17 godina. U toj studiji vrednost indeksa KEP kod mlečne

denticije bila je 3,42, a kod mešovite 5,24, dok je kod zdrave dece iznosila 1,43 za mlečnu i 5,1 za mešovitu denticiju [23]. Deca starija od šest godina su samostalnija i sama peru zube. U pogledu njihove fizičke i psihološke onesposobljenosti, kod njih je veći rizik za nastanak karijesa. Prema podacima SZO, više od 60% evropskih zemalja postiglo je cilj maksimalne vrednosti indeksa KEP (3) već kod dece uzrasta od dvanaest godina. U drugim zemljama, uključujući i baltičke, i dalje se beleži visok nivo indeksa KEP [23, 24].

Analizom povezanosti indeksa KEP i sredine u kojoj deca žive (selo ili grad) nije utvrđena statistički značajna razlika, kao ni kod povezanosti indeksa KEP i sa tim s kim deca žive (s roditeljima, u hraniteljskoj porodici ili u kolektivu).

Indeks KEP, kao glavni pokazatelj zdravlja zuba, ukazuje na loše zdravlje zuba dece s oštećenjem sluha i govora. Iako su oni fizički sposobni da održavaju higijenu zuba i usne šupljine, osnovnu prepreku u tome čini komunikacija. Često se oštećenje sluha pogrešno veže s poremećajem učenja, te se takva deca tako i tretiraju. Osim toga, oni nekada osećaju da ih i medicinsko osoblje sažaljeva, pa su njihove posete stomatologu retke, čime je i njihovo oralno zdravlje ugroženo [25].

## ZAKLJUČAK

Deca s oštećenjem sluha i govora koja pohađaju Centar za obrazovanje i vaspitanje i rehabilitaciju govora i slušanja u Banjaluci vrlo su lošeg oralnog zdravlja. Indeks KEP, jedan od najvažnijih parametara oralnog zdravlja, kod ove je dece mnogo veći u odnosu na decu iz ostalih evropskih i zemalja u regionu. Njima bi zato trebalo omogućiti odgovarajuću stomatološku uslugu s obučanim profesionalcima, koja će im biti pristupačnija. Takođe, neophodna je edukacija ove dece o održavanju higijene i njenom značaju, ali i uključivanje roditelja, staratelja i ustanova u program njihove zdravstvene zaštite. Optimalno rešenje za ovu populaciju bilo bi osnivanje stomatoloških ambulanti u sastavu ustanova u kojima deca s oštećenjem sluha i govora borave (škole ili kolektivi u kojima žive). U takvim ambulanta-stomatolozi bi vršili edukaciju o održavanju higijene usta i zuba, čime bi se unapredilo oralno zdravlje ove dece.

## NAPOMENA

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