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Oralni status odrasle populacije u hrvatskome gradu Kninu: presječno istraživanje

The Oral Status of Adult Population in the Croatian Town of Knin: a Cross Sectional Study

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Sažetak

Svrha: Epidemiološka istraživanja u mnogim zemljama pokazuju neravnomjernu raspodjelu oralnih bolesti u populaciji – primarno karijesa, te je zato glavna svrha ovoga presječnog istraživanja bila dobiti relevantne podatke oralnog statusa populacije u Kninu i okolici određene prema smjernicama SZO-a. **Ispitanici i metode:** U istraživanje je bilo uključeno 414 ispitanika u dobi od 18 do 65 godina. Zabilježeni podatci uključivali su opću anamnezu, ekstraoralni status, status oralne sluznice, status temporomandibularnih zglobova, zubni, parodontni i protetski status, te jesu li potrebni restaurativni zahvati. Obavljena je i usporedba među različitim grupama, ovisno o dobi, spolu, stupnju obrazovanja i podrijetlu. **Rezultati:** Prosječno je KEP indeks bio 17,3, zatim 1,7 – karijes, 6,2 – ispuni i 9,4 – ekstrahirani zubi. SIC indeks iznosio je 26,4. Razlika je bila značajna u grupama prema dobi i stupnju obrazovanja ($p < 0,001$). Postotak osoba s najvišim zbrojem CPI-a od 0 do 4 bio je 27,3, 16,9, 36,5, 16,4, i 2, 2,9 posto. Razlika između dobnih grupa u CPI vrijednostima bila je statistički značajna, a razlika ovisno o spolu i podrijetlu nije bila značajna ($p = 0,001$). **Zaključak:** Populacija u Kninu i okolici ima vrlo loš oralni status, najvjerojatnije zbog posljedica rata 1990-ih godina i ekonomske tranzicije te zato što nema nacionalnog programa za promicanje oralnoga zdravlja.

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Ključne riječi

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Uvod

U razvijenim zemljama uočen je pad oralnih bolesti, ali na globalnoj razini zabilježen je porast njihove prevalencije (1, 2). Čimbenik koji pridonosi incidenciji oralnih bolesti socijalno-ekonomskog je obilježja i uključuje siromaštvo, nepismenost, nedovoljnu edukaciju o oralnome zdravlju i neodgovarajuće službe za oralno zdravlje (3). Činjenice o nedovoljnoj edukaciji o oralnome zdravlju i loše vođenje javnoga zdravlja zubi uvelike su određene lošim ili nepostojećim nacionalnim programom oralnoga zdravlja i slaboj iskorištenosti postojećih ustanova (4, 5). Premda globalni teret oralnih bolesti upućuje na to da je potrebno planirati širu perspektivu s obzirom na problem, istraživanja karijesne prevalencije pokazuju nepravilnu distribuciju unutar populacija. Zato su istraživanja manjih područja subpopulacija poželjnija od velikih nacionalnih istraživanja (1, 6). Ostali čimbenici koji opravdavaju ovo istraživanje jesu demografske promjene, zastoj u napretku zbog rata 1990-ih, nedavno prijelazno razdoblje hrvatske ekonomije i nepostojanje nacionalnog programa

Introduction

The decline in the prevalence of oral diseases has been observed in developed countries, but the increasing prevalence of oral diseases was reported on a global level (1, 2). The factors that contribute to the incidence of oral diseases are of socioeconomic character, and include poverty, illiteracy, lack of oral health education, and lack of access to oral health services (3). The issues concerning lack of oral health education and inappropriate oral health services are greatly determined by weak or non-existent national oral health programs, and poorly managed public dental health facilities (4, 5).

Although the global burden of oral diseases suggests that health planning should be put in broader perspective, the caries prevalence studies in many countries show uneven distribution among the population. This makes more studies oriented towards specific regions or subpopulations preferable over large scale national surveys (1, 6). Other factors that make this particular study highly justifiable include demographic changes, the setbacks due to the war in the 1990-

ma za promicanje oralnoga zdravlja. Istraživanje provedeno na odabranom području Republike Hrvatske vjerojatno je najviše pogođeno navedenim utjecajima. Na osnovi posljednjega popisa stanovništva iz 2011. godine, u Kninu i okolici živi 15 388 stanovnika. Zbog zemljopisnog položaja taj je grad kroz povijest bio strateški vrlo važan. Nalazi se na tromedi Bosne i dviju hrvatskih regija – Like i Dalmacije. Zbog toga je često bio izvrnut ratnim razaranjima. Nakon nedavnoga rata (1991. – 1995.) populacija u Kninu znatno se promijenila. Naime, u grad i okolice doselilo se mnogo izbjeglica iz Bosne i Hercegovine (oko 7 000), a većina Srba koja je tu živjela do 1995. pobjegla je u Srbiju i srpska etnička područja u Bosni i Hercegovini. Oko dvije tisuće ljudi iz sjevernih dijelova Hrvatske pogođenih ratom u Slavoniji, također je naselilo taj kraj (7). Demografske promjene, zajedno s ostalim posljedicama rata i ekonomske tranzicije, utjecale su na mnoge aspekte života, uključujući i javnozdravstvene. Budući da dosad nije bila provedena epidemiološka studija o oralnome statusu stanovnika u Kninu i okolici, glavna svrha ove presječne studije bila je dobiti relevantne podatke o oralnome statusu stanovnika toga područja prema kriterijima SZO-a i usporediti ga između domaće i doseljene populacije. Daljnji cilj bio je usporediti rezultate s ostalim dijelovima Hrvatske i drugim europskim zemljama te ciljevima SZO-a *Ciljevi do 2020*. Potrebna su daljnja istraživanja poput ovoga, orijentirana na određeno područje, tako da se rezultati mogu iskoristiti za planiranje i organiziranje sustava zaštite oralnoga zdravlja i uzeti u obzir posebnosti određenih područja u planiranju zdravstvene zaštite i izradi programa za očekivano ostvarenje ciljeva SZO-a, a to je *zdravlje za sve*.

Ispitanici i metode

Podatci su prikupljeni u kninskome Domu zdravlja tijekom ožujka i travnja 2010., a u ispitivanje je bilo uključeno 414 ispitanika (184 muškarca i 230 žena) u dobi od 18 do 65 godina. Svi su bili obaviješteni o prirodni istraživanja, pa smo dobili njihove informirane suglasnosti. Pregledi su obavljani prema standardiziranim uvjetima korištenjem stomatološkog zrcala i CPI sonde uz dnevno svjetlo, a to je učinio jedan doktor dentalne medicine koji je educiran kao što je već opisano (5). Primijenjena sila sondiranja bila je jednaka težini od 25 g ($0,025 \text{ kg} \times 9,81 \text{ m/s}^2$). Obrazac je uobličen prema modelu procjene koji preporučuje Svjetska zdravstvena organizacija (8). Za svakog ispitanika zabilježen je spol, dob, stupanj obrazovanja, prebivalište (gradsko ili prigradsko) te podrijetlo (domaći ili doseljenici). Ovisno o stupnju obrazovanja ispitanici su podijeljeni u četiri grupe: s osnovnim, srednjoškolskim, višim i visokim obrazovanjem. Pojedinci s prebivalištem u Kninu prije rata (1991. – 1995.) uvršteni su u grupu domaćih, a doseljeničku skupinu činili su oni koji su se naselili od 1995. nadalje. Za dijagnozu i šifriranje korišten

ies, the economic transition through which Croatia recently went, and the lack of a national program for oral health promotion. The conducted research included Croatian region which was probably most affected by the above mentioned events.

According to the latest census from 2011, 15388 inhabitants live in Knin and its surroundings. The geographic position of Knin has made it an important strategic point throughout history. It is situated at the intersection of Bosnia and two Croatian regions: Lika and Dalmatia. Due to its position, it has been exposed to war events many times. After the recent war (1991-1995), the population of Knin has changed considerably. Many refugees from Bosnia and Herzegovina (about 7000 of them) inhabit Knin and the surrounding area, while the majority of Serbs who had lived in Knin until 1995, fled to Serbia and Serbian ethnic parts of Bosnia and Herzegovina. About 2000 people from the eastern part of Croatia, which was also greatly affected by the war - Slavonia, also populated the area after 1995 (7).

The demographic changes, together with other consequences of the war and economic transition, affected many aspects of life, including public health issues. Since the epidemiological study on oral status of Knin population has not been conducted so far, the main purpose of this cross sectional study was to obtain relevant data about the oral status of the population of Knin and its surroundings according to the WHO criteria, and to compare the oral status of domicile and immigrant population. Furthermore, the aim was to compare the results with the results from other parts of Croatia, and other European countries, as well as with the WHO "goals for 2020".

More studies such as this, oriented towards specific regions, are needed and their results could be used in planning and organizing oral health care considering specificities of the region in health planning and making programs to meet the expected WHO "health for all" goals.

Subjects and Methods

The data were collected in the Community Health Center Knin during March and April of 2010. The study included 414 (184 male and 230 female) subjects aged between 18 and 65 years. Each subject was informed on the nature of the study and gave informed consent for the examination.

The examination was carried out under standardized conditions using dental mirror and CPI probe under dental light, by one examiner who had been calibrated as described (5). The applied force on probing was equivalent to the weight of 25g ($0.025 \text{ kg} \times 9.81 \text{ m/s}^2$).

The form was custom designed according to the assessment form recommended by the World Health Organization (8). For each subject sex, age, education level, residence (urban vs. suburban-rural) and origin was recorded (domicile or immigrant). According to the education level, the subjects were divided into 4 groups: elementary, high school, baccalaureate, university level. The individuals residing in Knin from the times before the war (1991-1995) were considered domicile population, whereas those inhabiting it from any

je kriterij SZO-a (8). Zabilježen je zubni i parodontni status svih sekstanata (17 – 14, 13 – 23, 24 – 27, 37 – 34, 33 – 43 i 44 – 47) te su određeni KEP i CPI indeksi. Dodijeljene vrijednosti CPI-indeksa bile su sljedeće: 0 – za zdravi parodont, 1 – za gingivno krvarenje nakon sondiranja, 2 – za kamenac i krvarenje, 3 – za plitke parodontne džepove (4 – 5 mm) i 4 – za duboke parodontne džepove (6 mm i više).

Drugi podatci za procjenu oralnoga zdravlja bili su patološke lezije na oralnoj sluznici, opaciteti i hipoplazije (na zubima 14, 13, 12, 11, 21, 22, 23, 24, 36, 46), simptomi TMZ-a te protetski status.

Osim navedenih varijabli procijenjeno je i jesu li potrebni dentalni zahvati, zatim pojava bolova, infekcije ili hitnih stanja.

Podatci su obrađeni programskim paketom SPSS (SPSS v.16.0, SPSS Inc., Chicago, IL, SAD) deskriptivnom analizom, Hi-kvadrat testom (za određivanje značajnosti između kategorijskih varijabli), te Mann-Whitneyevim i Kruskal-Wallisovim testovima (za određivanje razlike između starosnih skupina i spola). Normalna raspodjela podataka ispitana je Kolmogorov-Smirnovljevim testom. Stupanj značajnosti postavljen je na 95 posto ($p < 0,05$).

Rezultati

Uzorak

U istraživanje je bilo uključeno 414 ispitanika – 184 muškarca (44,4 %) i 230 žena (55,6 %). Pritom je domaće stanovništvo činilo 52,7 posto sudionika, a doseljeničko 47,3. Prosjek dobi bio je 39,14 (SD = 13,12), a t-test pokazao je da nije bilo značajne razlike u dobnoj raspodjeli između domaćega (M = 40,23, SD = 13,36) i doseljenog stanovništva (M = 37,93, SD = 12,78) među grupama ($t = 1772$, $df = 408$, $p = 0,078$). Nije bilo statistički značajne razlike između domaće i doseljene grupe ispitanika prema kriterijima raspodjele prema spolu i stupnju obrazovanja ($\chi^2 = 0,663$, $df = 1$, $p = 0,430$ i $\chi^2 = 3,589$, $df = 3$, $p = 0,309$). Postotak ispitanika s višim stupnjem obrazovanja bio je veći u domaćoj grupi, a značajno veći dio doseljenika bio je naseljen u urbanim područjima ($\chi^2 = 13,470$, $df = 2$, $p = 0,001$).

Sistemske bolesti

Od općih bolesti kardiovaskularne su bile najčešće (12,7 %), slijede alergije (2,9 %) i *diabetes mellitus* (2,0 %). Istaknimo da je 0,2 posto ispitanika imalo jednu od zabilježenih infektivnih bolesti (HIV, TBC, hepatitis). Među ispitanicima bilo je 40,5 posto pušača.

Ekstraoralni status

Ekstraoralni pregled pokazao je da 88,5 posto ispitanika nije imalo patoloških promjena na oralnoj sluznici, 7,8 posto imalo je UREF (ulceracija, crvenilo, erozija, fisure) na glavi, vratu ili udovima, 3,2 posto imalo ga je na nosu, obrazima ili bradi, a 0,2 posto na usnim komisurama.

Pregledom TMZ-a ustanovljen je mali postotak ispitanika sa simptomima TMZ-a (3,9 %), znakovima (7,6 %) ili

time between 1995 and today were considered immigrants.

For diagnosis and coding, the WHO (8) criteria were employed. Dental status and periodontal health status for all sextants (17-14, 13-23, 24-27, 37-34, 33-43 and 44-47) were recorded, and DMFT and CPI indices were determined. The scores of the CPI index were as follows: score 0- healthy periodontium, score 1- gingival bleedings, score 2: calculus and bleeding, score 3: shallow periodontal pockets (4 to 5 millimeters), and score 4: deep periodontal pockets (6 millimeters or more).

Other variables recorded in assessing oral status were: pathological lesions on oral mucosa, opacities and hypoplasia (on teeth 14, 13, 12, 11, 21, 22, 23, 24, 36, 46), TMJ symptoms and/or signs and prosthodontic status. Apart from the mentioned variables, the following was estimated: the need for dental treatment, the presence of pain, infection or urgent conditions.

The data were analyzed using SPSS program package (SPSS v. 16.0, SPSS Inc., Chicago, IL) using descriptive analysis, chi square test (to determine significant differences between the categorical variables), Mann-Whitney test and Kruskal-Wallis test (to determine differences between age groups and genders). Normality of data was tested using Kolmogorov-Smirnov test. The level of significance was 95% ($p < 0.05$).

Results

Sample

The study included 414 subjects out of which 184 (44.4%) were males and 230 (55.6%) females. Domicile population accounted for 52.7% and immigrants 47.3%. The average age was 39.14 years (SD=13.12), and t-test showed that there was no significant difference in age distribution between the domicile (M=40.23, SD=13.36) and immigrant (M=37.93, SD=12.78) group ($t=1.772$, $df=408$, $p=0.078$). There were no statistically significant differences between domicile and immigrant group according to the gender and level of education distribution ($\chi^2=0.663$, $df=1$, $p=0.430$ and $\chi^2=3.589$, $df=3$, $p=0.309$, respectively). The percentage of subjects with higher education level was higher among the domicile group, and significantly more immigrants populated urban areas ($\chi^2=13.470$, $df=2$, $p=0.001$).

Systemic diseases

Of the systemic diseases, cardiovascular diseases were the most prevalent (12.7%), followed by allergies (2.9%) and diabetes mellitus (2.0%) while 0.2% of the subjects had one of the listed infective diseases (HIV, TBC, Hepatitis). 40.5% were smokers.

Extraoral Status

Extraoral examination showed that 88.5% of the subjects did not exhibit any pathological changes of oral mucosa, 7.8% exhibited UREF (ulceration, redness, erosion, and fissure) on the head, neck or limbs, 3.2% had UREF on the nose, cheeks or chin, while 0.2% was on the labial *comissurae*.

TMJ examination revealed a rather small percentage of subjects with TMJ symptoms (3.9%), signs (7.6%) or sounds

škljocanjem (8,6 %). Samo među 1,5 posto ispitanika TMZ je bio osjetljiv na palpaciju, a 0,2 posto moglo je ograničeno otvoriti usta. Prevalencija TMZ-a i ekstraoralnih patoloških nalaza bila je vrlo niska, pa nije obavljena usporedba domaćega i doseljenog stanovništva.

Oralni status

Meka tkiva

Oralni pregled pokazao je da gotovo 95 posto ispitanika ima zdravu sluznicu. Kandidijaza je bila pronađena kod 2,4 posto sudionika, ulceracije kod 1,2 posto, leukoplakija kod 0,7 posto i lihen ruber planus kod 0,2 posto. Većina promjena bila je na labijalnim granicama (63,2 %), zatim na nepcu (meko/tvrdo) (15,8 %), alveolarnim nastavcima/gingivi (8,8 %) i jeziku (7,0 %), a učestalost je bila najniža na labijalnim kutovima, sulkusima i obraznoj sluznici (po 1,8 %).

Opacitet/hipoplastične promjene

Postotak uočenih defekata mineralizacije prikazan je u tablici 1. Najčešća promjena bila je hipoplazija. Nije bilo statistički značajne razlike između domaćega i doseljenog stanovništva ($p_{\text{opacitet}} = 0,646$; $p_{\text{hipoplazija}} = 0,605$). U obje grupe nije nađena ni značajna razlika među spolovima (domaće: $p_{\text{b.o.}} = 0,438$; $p_{\text{opacitet}} = 0,738$; $p_{\text{hipoplazija}} = 0,873$; doseljeno: $p_{\text{b.o.}} = 0,672$; $p_{\text{opacitet}} = 0,743$; $p_{\text{hipoplazija}} = 0,882$).

Prosječan broj zuba bez hipomineralizacijskih promjena (b.o.) bio je značajno viši u najmlađoj i domaćoj grupi ($\chi^2 = 35,652$, $df = 4$, $p < 0,001$) te doseljenoj ($\chi^2 = 23,338$, $df = 4$, $p < 0,001$).

(8.6%). Only 1.5% of subjects exhibited sensitivity on palpation, and reduced mouth opening was observed in 0.2%. The prevalence of TMJ related phenomena and the prevalence of extraoral pathological findings was very low, hence the comparison between domicile and immigrant group was not made.

Oralni Status

Soft tissues

Oral examination showed that almost 95% of the subjects had healthy mucosa. Candidiasis was found in 2.4%, ulcerations in 1.2%, leukoplakia in 0.7%, lichen ruber planus in 0.2%. Most of the changes were located on labial borders (63.2%), followed by those on the palate (soft/hard) (15.8%), alveolar process/gingiva (8.8%), tongue (7.0%), while the frequency was the lowest on labial *anguli*, sulci and buccal mucosa (1.8% each).

Opacity/hypoplastic changes

The percentage of observed mineralization defects is shown in Table 1. The most frequent change was hypoplasia. There was no statistically significant difference between the domicile and immigrant group ($p_{\text{opacity}} = 0.646$; $p_{\text{hypoplasia}} = 0.605$). Also, there were no significant differences noted between genders in either group (domicile: $p_{\text{b.o.}} = 0.438$; $p_{\text{opacity}} = 0.738$; $p_{\text{hypoplasia}} = 0.873$; immigrant: $p_{\text{b.o.}} = 0.672$; $p_{\text{opacity}} = 0.743$; $p_{\text{hypoplasia}} = 0.882$).

The average number of teeth not exhibiting any hypomineralization change was significantly higher in the youngest group in both domicile ($\chi^2 = 35.652$, $df = 4$, $p < 0.001$) and immigrant group ($\chi^2 = 23.338$, $df = 4$, $p < 0.001$).

Tablica 1. Postotak ispitanika s opacitetom/hipoplazijom na pojedinim zubima
Table 1 Percentage of subjects with opacity/hypoplasia on certain teeth

Zub • Tooth	b.o.	Ogranični opacitet • Limited opacity	Difuzni opacitet • Diffuse opacity	Hipoplazija • Hypoplasia	Defekti • Defects	Ogranični i difuzni opacitet • Limited and diffuse opacity	Ograničena opacitet i hipoplazija • Limited opacity and hypoplasia	Sva tri stanja • All three conditions	Nije zabilježeno • Not recorded	Ukupno • Total
14	38.9 %	2.1 %	0.5 %	24.5 %	0.5 %	0	0	0	33.4 %	100.0 %
13	37.8 %	2.3 %	1.0 %	35.5 %	0	0.5 %	0	0	23.0 %	100.0 %
12	41.2 %	5.4 %	2.0 %	25.8 %	0	0.3 %	0	0	25.3 %	100.0 %
11	41.5 %	5.9 %	1.5 %	28.0 %	0.3 %	0.3 %	0.3 %	0.3 %	22.1 %	100.0 %
21	42.0 %	6.1 %	1.5 %	27.7 %	0	0	0.3 %	0.3 %	22.1 %	100.0 %
22	43.2 %	4.3 %	1.5 %	24.6 %	0.3 %	0	0.5 %	0	25.6 %	100.0 %
23	41.6 %	2.3 %	0.5 %	31.4 %	0.3 %	0	0.5 %	0	23.5 %	100.0 %
24	40.5 %	3.6 %	0	23.8 %	0.3 %	0	0	0	31.8 %	100.0 %
36	29.7 %	1.4 %	0.3 %	14.3 %	0	0.3 %	0	0	54.1 %	100.0 %
46	30.0 %	2.0 %	0.6 %	13.4 %	0	0.3 %	0	0	53.8 %	100.0 %

Parodontni status i CPI

Parodontni status zabilježen je u svim sekstantima, a CPI indeks određen je prema preporukama SZO-a (vrijednosti 0, 1, 2, 3, i 4 za zdravi parodont, krvarenje, kamenac i krvarenje, džepove 4 – 5 mm, i džepove ≥ 6 mm). Parodontni status ispitanika nalazi se u tablici 2. U prosjeku su imali dva zdrava sekstanta, jedan s krvarenjem, jedan sa zubnim kamenom (supra i/ili subgingivni) te jedan sekstant isključen.

Periodontal status and CPI

Periodontal status was recorded for all sextants and CPI was determined as suggested by the WHO (score 0, 1, 2, 3 and 4 for healthy periodontium, gingival bleeding, calculus and bleeding, pockets 4-5 mm and pockets ≥ 6 mm, respectively).

Periodontal status of the examined population is shown in Table 2. The subjects had on average two healthy sextants,

Tablica 2. Parodontni status u različitim dobnim skupinama (N = 414)
Table 2 Periodontal status in different age groups (N=414)

Parodontni status • Periodontal status	< 24		25 – 34		35 – 44		45 – 54		55+	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
HP										
Ne • No	16	(23)	37	(37)	40	(44)	60	(67)	48	(77)
Da • Yes	53	(77)	63	(63)	51	(56)	29	(33)	14	(23)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)
BP										
Ne • No	43	(62)	53	(53)	49	(54)	60	(67)	45	(72)
Da • Yes	26	(38)	47	(47)	62	(68)	29	(33)	17	(27)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)
Kamenac • Calculus										
Ne • No	47	(68)	57	(57)	37	(41)	38	(43)	42	(68)
Da • Yes	22	(32)	43	(43)	54	(59)	51	(57)	20	(32)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)
Džepovi 4–5 mm • Pocket 4-5mm										
Ne • No	65	(94)	88	(88)	71	(78)	66	(74)	48	(77)
Da • Yes	4	(6)	12	(12)	20	(22)	23	(26)	14	(23)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)
Džepovi 6+ mm • Pocket 6+mm										
Ne • No	69	(100)	99	(99)	85	(95)	85	(95)	60	(97)
Da • Yes	0	(0)	1	(1)	2	(5)	4	(5)	2	(3)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)
Sekstant nije uključen • Sextant not included										
Ne • No	57	(83)	69	(69)	42	(46)	30	(34)	11	(18)
Da • Yes	12	(17)	31	(31)	49	(54)	59	(66)	51	(82)
Ukupno • Total	69	(100)	100	(100)	91	(100)	89	(100)	62	(100)

HP – zdravi parodont • healthy periodontium; BP – krvarenje • bleeding

Značajna razlika između pušača i nepušača uočena je jedino u prosječnom broju zdravih zuba – nepušači su ih imali više ($p < 0,001$) te broju sekstanata koji su nedostajali – pušači su ih imali više ($p = 0,005$). U analizi prema stupnju obrazovanja, grupe s višim stupnjem (više i visoko) imale su značajno više zdravih zuba ($p < 0,001$), a najveća frekvencija isključenih sekstanata koji nedostaju bila je među najmanje obrazovanimima ($p < 0,001$). CPI vrijednosti prikazane su u tablici 3. Razlika CPI indeksa u grupama ustrojenima prema dobi bila je statistički značajna (ANOVA, $F = 5,594$, $p = 0,001$), a razlika među spolovima nije bila značajna (ANOVA, $F = 3,353$, $p = 0,068$), osim što je CPI vrijednost 0 mnogo bila češća kod žena ($F = 5,371$, $p = 0,021$). Razlika u CPI vrijednostima između domaćega i doseljenog stanovništva nije bila značajna ($F = 0,236$, $p = 0,628$).

Dentalni status i KEP

Zabilježeni dentalni status i rezultati su u tablici 4. a na slikama 1. i 2. su dentalni status u dobnim grupama i grupama ovisno o stupnju obrazovanja. Pojedinci su u prosjeku imali 1,7 karijesa, 6,2 ispuna i 9,57 izvađenih zuba. Karijesom zahvaćene zube nije imalo 49 posto ispitanika, 15,2 posto imalo je jedan karijes, 10,6 posto dva, 7,2 posto tri i 17,9

one sextant with bleeding, one with calculus (supra- and/or subgingival), and one sextant excluded. Significant differences between smokers and nonsmokers were found only in the average number of healthy teeth which was higher in nonsmokers ($p < 0,001$), and the number of excluded sextants which was higher in smokers ($p = 0,005$). According to the education level, it was found that the groups with higher education level (baccalaureate and university) had significantly more healthy teeth ($p < 0,001$), and the highest frequency of excluded sextants was among the least educated ($p < 0,001$).

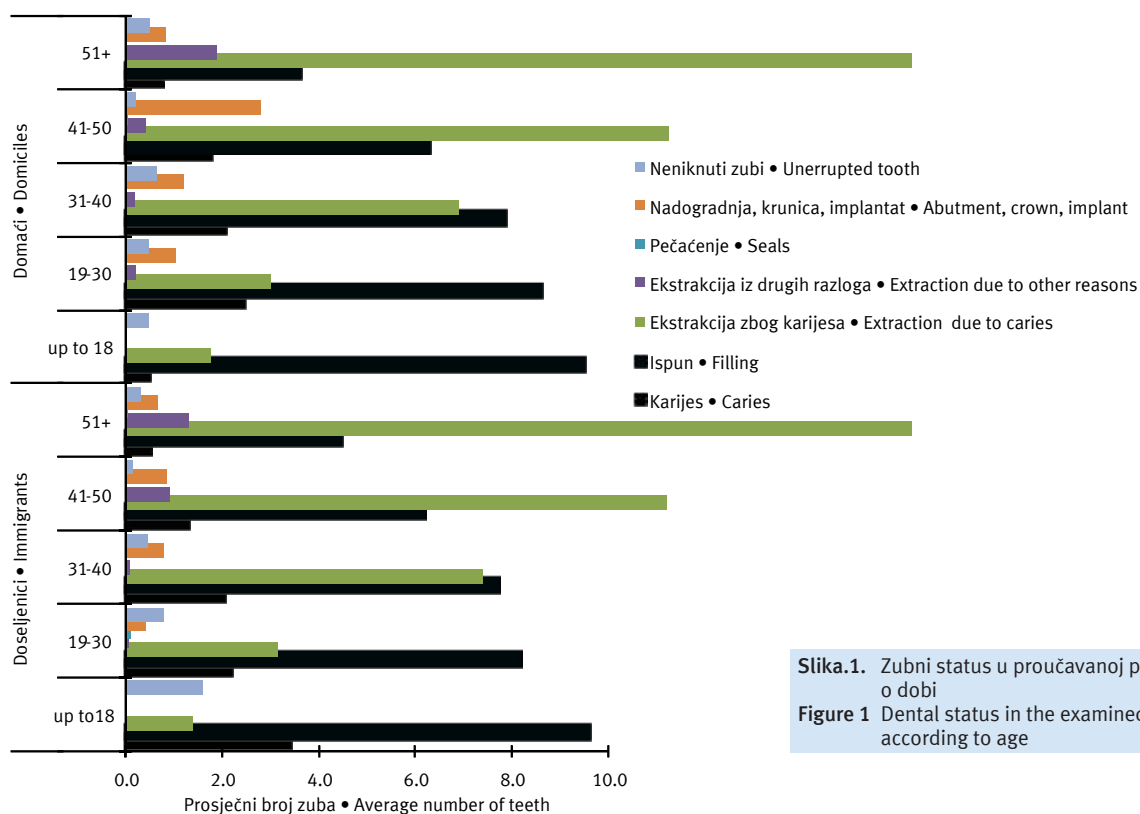
CPI score is shown in Table 3. The differences between the age groups in CPI scores were statistically significant (ANOVA, $F = 5,594$, $p = 0,001$), while the difference between genders was not significant (ANOVA, $F = 3,353$, $p = 0,068$), except for CPI score 0 which was significantly more frequent in females ($F = 5,371$, $p = 0,021$). The difference in CPI score between domestic and immigrant population was not significant ($F = 0,236$, $p = 0,628$).

Dental status and DMFT

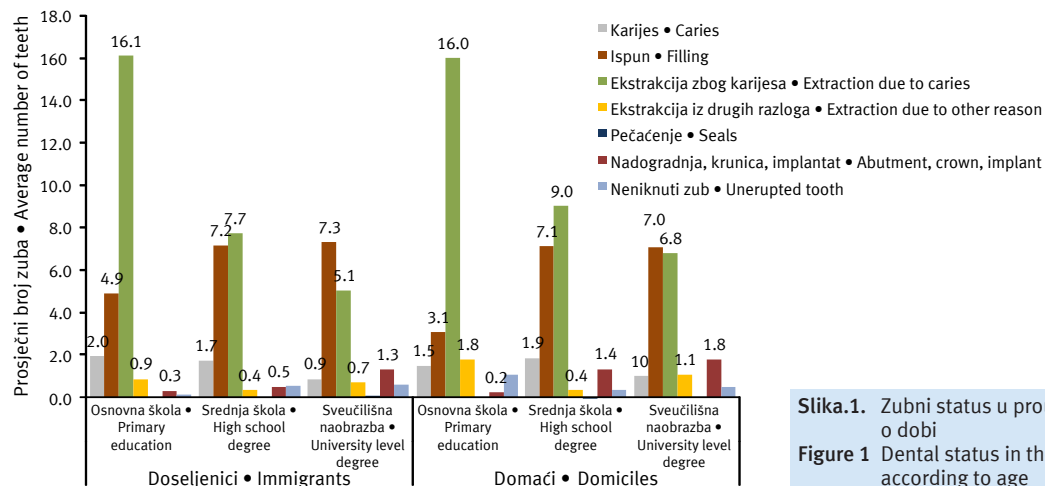
Dental status was recorded and the results were presented in Table 4. Figures 1 and 2 show the dental status according to the age and the level of education. An individual had 1.7 caries, 6.2 fillings, and 9.57 teeth extracted on average. Carious teeth were not recorded in 49% of the subjects, 15.2% had one carious tooth, 10.6% two, 7.2% three, and 17.9%

Tablica 3. CPI ovisno o dobi, spolu i podrijetlu
Table 3 CPI according to age, gender and origin

	% osoba s najvišim vrijednostima • % of persons with the highest score				
	0	1	2	3	4
Ukupno • Total	27.3	16.9	36.5	16.4	2.9
<24	43.5	20.3	30.4	5.8	0
25 – 34	29	22	36	12	1
35 – 44	16	16	43.6	19.1	5.3
45 – 54	20.2	11.2	40.4	23.6	4.5
55+	33.9	14.5	27.4	21	3.2
Muškarci • Males	24.5	17.9	37	16.3	4.3
Žene • Females	29.6	16.1	36.1	16.5	1.7
Domaći • Domestic	25	16.8	37.8	17.3	3.1
Doseljeni • Immigrant	29.4	17	35.3	15.6	2.8



Slika.1. Zubni status u proučavanoj populaciji ovisno o dobi
Figure 1 Dental status in the examined population according to age



Slika.1. Zubni status u proučavanoj populaciji ovisno o dobi
Figure 1 Dental status in the examined population according to age

Tablica 4. Aritmetička sredina, standardna devijacija, medijan, interkvartilni raspon, minimalni i maksimalni broj karijesa, ispuna, vadenja, pečaćenja, bataljaka, neniklih zuba
Table 4 Arithmetic mean, standard deviation, median, interquartile range, minimal and maximal number of caries, fillings, extractions, seals, abutments, unerupted teeth

	Aritmetička sredina • Arithmetic mean	Std. devijacija • Std. deviation	Medijan • Median	Interkvartilni raspon • Interquartile range	Min.	Maks. • Max.	N
Karijes • Caries	1.66	2.41	1.00	3	0	12	414
Ispuni • Filling	6.19	4.59	6.00	6	0	21	414
Ekstrakcije zbog karijesa • Extraction due to caries	8.94	8.89	6.00	11	0	32	414
Ekstrakcije zbog drugog razloga • Extraction due to other reasons	0.63	3.56	0.00	0	0	32	414
Ukupno ekstrahiranih • Total extracted	9.57	9.15	7.00	13	0	32	414
Pečati • Seal	0.02	0.23	0.00	0	0	3	414
Bataljak, kruna, implantat • Abutment, crown, implant	0.98	3.03	0.00	0	0	26	414
Nenikli zub • Unerupted	0.49	1.23	0.00	0	0	4	414
DMFT	17.34	7.53	17.00	11	0	32	414

postojalo više od tri takva zuba (4 – 12 zuba). Ispune nije imalo 14 posto ispitanika, a ostali od jednoga do dvadeset i jednoga po pojedincu. Samo 16,9 posto nije imalo izvađenih zuba, a 3,9 posto bilo je bezubo. Postotak bezubosti bio je značajno veći kod starijih od 45 godina (Chi-square, $\chi^2 = 24,518$, $df = 4$, $p = 0,001$, $C = 0,237$). Postotak pojedinaca s funkcionalnom denticijom (21 – 32 zuba) bio je značajno viši kod ispitanika mlađih od 44 godine (Chi-square, $\chi^2 = 141,250$, $df = 4$, $p < 0,001$, $C = 0,506$). Manje od 21 zuba imalo je 33,1 posto ispitanika. Ekstrakcije su bile uglavnom zbog karijesa. Kod 93,7 posto ispitanika nije bilo drugih razloga za ekstrakciju. Zubni pečati nađeni su samo kod 1,5 posto ispitanika. Većina (84,8 %) nije imala ni bataljke, ni krune, ni implantate. Njihov prosječan broj bio je značajno veći među domaćim stanovništvom ($p < 0,05$). Nenikli zubi uočeni su kod 14,8 posto ispitanika i to od jednoga do četiriju zuba.

Iz prikupljenih podataka izračunat je KEP indeks te je dobivena prosječna vrijednost od 17,5. KEP indeks bio je manji od 3 kod samo 5 od ukupno 414 ispitanika (1,2 %). Najviši zabilježeni KEP je bio 32 kod njih 4,8 posto. Prosječni KEP kod 30 posto ispitanika s najlošijim KEP-om, tj. SIC indeks iznosio je 26,44 (SD = 3,34, min. = 22, maks. = 32). KEP i SIC indeksi nisu se značajno razlikovali među grupama domaćega i doseljenog stanovništva ($p = 0,438$), između muškaraca i žena ($p = 0,288$), te urbane i suburbane/ruralne populacije ($p = 0,091$). Za oba spola prosječan KEP indeks bio je 17. Razlika je bila značajna među grupama ovisno o razini obrazovanja ($p < 0,001$) i dobnim skupinama ($p < 0,001$) – kod ispitanika s višom i visokom razinom obrazovanja, te u mlađim dobnim skupinama KEP indeks je bio značajno niži ($p < 0,001$). Značajno viši bio je i kod pušača ($p = 0,001$). U grupi doseljenika zabilježeno je značajno više karijesa ($p = 0,006$) i ispuna ($p < 0,001$) u najmlađoj skupini (<18 godina) u usporedbi s ostalim dobnim grupama, a prosječni broj vadenja, u odnosu prema ostalim grupama, bio je značajno veći među ispitanicima > 41godine ($p < 0,001$). U grupi domaćih ispitanika zabilježena je značajno viša fre-

had more than three carious teeth (4-12 teeth). In 14% of the subjects there were no fillings recorded, while in the rest of them the number of fillings ranged from one to 21 per individual. Only 16.9 % of the subjects had 0 teeth extracted, and 3.9% were completely edentulous. The percentage of edentulous individuals was significantly higher among those older than 45 years (Chi-square, $\chi^2=24.518$, $df=4$, $p=0.001$, $C=0.237$). The percentage of individuals with functional dentition (i.e. 21-32 teeth) was considerably higher among subjects younger than 44 (Chi-square, $\chi^2=141.250$, $df=4$, $p<0.001$, $C=0.506$). 33.1% of the subjects had less than 21 teeth. The extractions were mostly due to caries. In 93.7% of the subjects there were no extractions due to other reasons. Dental fissure sealants were found in only 1.5 % of the subjects. The great majority of the subjects (84.8%) had neither abutments, nor crowns nor implants. Nevertheless, their average number was significantly higher in domicile population ($p<0.05$). Unerupted teeth were recorded in 14.8% of the subjects, and amounted to 1-4 teeth.

From the collected data, DMFT index was calculated and its average value equaled 17.5. DMFT index equaled less than three in only 5 of 414 subjects (1.2%). The highest DMFT observed equaled 32 in 4.8%. The average DMFT among the 30% of the individuals with the worst DMFT index i.e. SIC index, counted 26.44 (SD=3.34, min=22, max=32).

DMFT and SIC indices were not significantly different between the domicile and immigrant group ($p=0.438$), males and females ($p=0.288$), and urban and suburban/rural population ($p=0.091$). In both genders the average DMFT was 17. The difference was significant regarding the level of education ($p<0.001$) and age ($p<0.001$) – in subjects with baccalaureate and university diploma, and in younger age groups, DMFT was significantly lower ($p<0.001$). Also, DMFT was significantly higher in smokers ($p=0.001$).

In the immigrant group, significantly more caries ($p=0.006$) and fillings ($p<0.001$) were recorded in the young-

kvencija karijesa u grupi od 19 do 30 godina ($p < 0,01$), ispunjeni u grupi mlađoj od < 18 godina ($p < 0,001$), a vađenja su bila najčešća u grupi > 41 godine ($p < 0,001$).

U grupama ovisnima o stupnju obrazovanja, u grupi s višim i visokim obrazovanjem prosječan broj zuba s ispunima bio je značajno viši od ($p_{\text{domaće}} < 0,001$ $p_{\text{dospeljenici}} = 0,038$), a broj izvađenih značajno niži ($p_{\text{domaće i doseljenici}} < 0,001$) u usporedbi s grupom s osnovnim obrazovanjem. Među domaćom populacijom prosječni broj bataljaka, kruna i implantata bio je značajno viši kod ispitanika sa srednjoškolskim i visokim stupnjem obrazovanja, u usporedbi s onima s osnovnim obrazovanjem ($p = 0,031$). Kad je riječ o protetskom statusu, kod dvije trećine ispitanika u gornjoj čeljusti te tri četvrtine u donjoj čeljusti, nisu nađeni nadomjestci. Od proteza, radilo se o djelomičnim protezama u objema čeljustima kod 13 posto ispitanika, totalne gornje proteze nosilo je 10 posto, a fiksne protetske naprave zabilježene su kod 12 posto protetskih ispitanika, većinom u gornjoj čeljusti. Potrebna protetska terapija u gornjoj čeljusti uočena je kod 37 posto ispitanika, a u donjoj kod njih 48 posto. Najčešći protetski radovi u obje čeljusti bili su mostovi. Osim protetske terapije uočena je potreba za ostalim dentalno-medicinskim zahvatima kod 73,4 posto ispitanika i većini je bio nužan jedan restaurativni zahvat s ispunom (kod 71,7 % ispitanika).

Rasprava

Oralni zdravstveni status određuju mnogobrojni čimbenici na pojedinačnoj i društvenoj razini. Osim socijalno-demografskih i individualnih ponašanja, kad je riječ o oralnome zdravlju, u nedavnim izvještajima istaknuto je da je iznimno važna organizacija sustava zdravlja i usmjerenost programa oralnoga zdravlja tako da se postigne zadovoljavajuće stanje (1, 2, 9, 10). Štoviše, manjak odgovarajućih programa zaštite oralnog zdravlja smatra se glavnom determinantom neprimjerene brige za zdravlje zuba i usne šupljine i razlogom za visoku prevalenciju oralnih bolesti, čime se stvara *teret oralnih bolesti*. Nadalje, u različitim državama i područjima uočeni su različite pojave oralnih bolesti, što odražava rizične profile i ističe potrebu za organiziranjem službi oralnoga zdravlja da bi se zadovoljile potrebe lokalne populacije za globalnu strategiju prijedloga SZO-a (4, 11, 12). Nedostatak nacionalne strategije o oralnome zdravlju u Republici Hrvatskoj zahtijeva hitnu epidemiološku analizu i regionalno usmjerena istraživanja u skladu s globalnim ciljevima. Karijes i parodontne bolesti dvije su najčešće oralne patologije, a indeksi koji opisuju njihovu prevalenciju često se upotrebljavaju za grubo opisivanje oralnoga zdravstvenog statusa populacije. Značajni karijesni indeks (SIC) noviji je i uveden je za identificiranje pojedinaca ili grupa s najvišim KEP vrijednostima (13). Ciljanje na pojedince s najvišim prevalencijama bolesti uvjet je za specifične i učinkovite mjere. Prvi je cilj postići KEP indeks manji od 3, a sljedeći je za-

est group ($< 18y$) compared to the other age groups, while the average number of extractions was significantly higher in subjects aged > 41 years ($p < 0,001$) than in others.

In domicile group, a significantly higher caries frequency was recorded in subjects aged between 19-30 years ($p < 0,001$), fillings in those < 18 years ($p < 0,001$), while extractions were the most frequent in > 41 years ($p < 0,001$).

Regarding the level of education, in the group with high school and university diploma, the average number of teeth with fillings was significantly higher ($p_{\text{domicile}} < 0,001$ $p_{\text{immigrants}} = 0,038$), and the number of extracted teeth significantly lower ($p_{\text{domicile and immigrant}} < 0,001$) compared to the group with elementary education. In domicile population, the average number of abutments, crowns and implants was significantly higher in high school and university educational level, than in the subjects with elementary educational level ($p = 0,031$).

As far as prosthodontic status is concerned, in 2/3 of the subjects the denture was not present in the upper jaw, and in 3/4 it was not recorded in the lower jaw.

Of the dentures recorded, partial dentures in both jaws were present in 13% of the subjects, total upper dentures in 10%, while fixed dentures were recorded in 12% of the subjects, and mostly in the upper jaw. The need for prosthodontic treatment was noted in 37% and 48% of upper and lower jaws respectively. The most frequent prosthodontic need included bridges in both jaws.

The dental treatment, apart from prosthodontics, was required in 73.4% of the subjects, and the most needed one was restoration with fillings (in 71.7% of the subjects).

Discussion and Conclusion

Oral health status is determined by numerous factors on individual and community level. Besides the socio-demographic and individual factors (oral health behaviors), the importance of oral health systems organization and oral health programs orientation in achieving satisfactory oral health, has been pointed out in recent reports (1, 2, 9, 10). Moreover, the lack of proper community oral health programs has been recognized as the major determinant in inadequate oral health care and high oral diseases prevalence, generating the growing "burden of oral diseases". Furthermore, among different countries and regions, different patterns of oral disease have been reported, which reflects distinct risk profiles and brings about the need to organize oral health services that meet the needs of the local population as suggested by WHO global strategies (4, 11, 12). The lack of national strategy in oral health policy in Croatia calls for urgent epidemiological screening, and regionally oriented studies in accordance with global aims.

Caries and periodontal diseases are the two most common oral pathologies, and the indices describing the prevalence of these two diseases are often used to roughly describe the oral health status of a population. Significant Caries Index (SIC index) is a newer index introduced to identify the individuals or groups exhibiting the highest DMFT values (13). Focusing on individuals having the highest disease prevalence is a prerequisite for more specific and effective

datak SIC indeks 3 u trećini populacije s najvišim KEP vrijednostima. Kad se postigne SIC na nacionalnoj razini, treba primijeniti mjere orijentirane na regije, gradove i čak škole.

Prosječna vrijednost KEP-a za ispitivanu populaciju (18 – 65 godina) bila je 17,3, što je jako mnogo. Prosječno je svakoj osobi nedostajalo gotovo 10 zuba, što odražava model postupanja prema kojemu se preferira vađenje zuba, a ne liječenje. Prosječni SIC indeks također je vrlo visok – 26,44. U populaciji s višim stupnjem obrazovanja KEP je bio značajno niži, što se i očekivalo jer je školovanost često socijalno-demografski čimbenik koji utječe na status oralnih bolesti, pogotovo na prevalenciju karijesa. Slično je, prema očekivanju, KEP indeks značajno viši među pušačima ($p = 0,001$). Visoke vrijednosti KEP i SIC indeksa mogu se objasniti nepovoljnim ratnim zbivanjima 1990-ih, što nije rezultiralo samo masovnim migracijama, nego je i ekonomski znatno utjecalo na populaciju. Nadalje, postupak ekonomske tranzicije koji je počeo ranih 1990-ih još traje. Već je rečeno da su najviše KEP vrijednosti zabilježene u tranzicijskim zemljama (14). Naše istraživanje pokazalo je da su KEP i SIC vrijednosti visoke bez obzira na podrijetlo populacije. Razlog za to vjerojatno je u činjenici da je većina doseljenika došla iz dijelova Bosne i Hercegovine koji su zemljopisno slični kontinentalnom dijelu Dalmacije, u Kninu i okolici već su više od 15 godina pa se može očekivati da su u tom razdoblju već nestale neke razlike u mentalitetu i navikama. Zbog niske zdravstvene samosvijesti i odsutnosti preventivnih programa, pojavljuju se ekstremno visoke KEP i SIC vrijednosti indeksa. Opisana poslijeratna KEP vrijednost za srednju Dalmaciju (obalni dio i unutrašnjost) bila je 21,73 za osobe od 35 do 44 godine i 23,73 za one od 65 do 74 godine (15), što se slaže s našim rezultatima. Premda smo proučavali odraslu populaciju, ovdje se pozivamo i na dvanaestogodišnju populaciju da bismo olakšali usporedbe među državama. Trend povećanja KEP indeksa među dvanaestogodišnjacima u Hrvatskoj opisan je i povećao se s 2,6 u 1991. na 3,5 u 1999. godini. Jurić i suradnici izvijestili su 2008. godine o KEP indeksu od 6,67 i SIC-u od 1089 među dvanaestogodišnjacima u drugom području Hrvatske koje je također bilo snažno pogođeno ratom (Petrinja) (16, 17). Ovakva situacija zahtijeva hitno planiranje i primjenu preventivnih mjera, posebno u nekim područjima. Naša je zemlja 2013. postala članica EU-a i kada usporedimo KEP vrijednosti drugih europskih zemalja, rezultati su alarmantni. Na primjer, najnoviji KEP rezultati u obližnjim zemljama Unije, mjereni među dvanaestogodišnjacima, iznose prema datoteci oralnoga zdravlja Sveučilišta u Malmöu (18), u Sloveniji 1,8 (1998.), Italiji 1,1 (2004.) i Austriji 1,0 (2002.). Rezultat je sličan i u bivšim socijalističkim zemljama koje su prošle ili prolaze kroz ekonomsku tranziciju, bez obzira na članstvo u EU. U Albaniji iznosi 3,1 (2005.), Bosni i Hercegovini 4,2 (2004.), Bugarskoj 3,1 (2008.), Mađarskoj 3,3 (2001.), Latviji 3,4 (2004.), Litvi 3,7 (2005.), Makedoniji 3 (1999.), Poljskoj 3,2 (2003.), Srbiji 2,9 do 7,8 (1994.) i Slovačkoj 4,3 (1998.). U ranijim epidemiološkim istraživanjima istaknuto je da je KEP indeks relevantni pokazatelj oralnoga zdravlja i socijalno-ekonomskog statusa, što je potvrđeno i našim istraživanjem (14). U industrijaliziranim zapadnim zemljama karijesna se prevalencija

measures. However, the first goal to be achieved is DMFT less than 3, and SiC index 3 in 1/3 of the population with the highest DMFT is a further step. When SiC on the national level is achieved, the measures should be oriented towards regions, towns and even schools.

The average value of DMFT index for the population examined (18-65 years) was 17.3, which is very high. On average, each person had almost 10 missing teeth, which reflects a certain behavioral pattern where tooth extraction is preferred over treatment. The average SIC index is also very high, 26.44. In more educated population DMFT was significantly lower, as expected, since the education is firmly recognized as the socio-demographic factor influencing oral disease status, namely caries prevalence. Similarly, the DMFT index was significantly higher in smokers, as expected ($p=0.001$). The high values of DMFT and SIC indices could be explained by unfavorable war events in the 1990ies that, not only led to mass migrations, but seriously affected the population economically. Furthermore, the process of economic transition began in the early 1990s and is still going on. It has previously been found that the highest DMFT values are found in transition countries (14). Our study also showed that the DMFT and SIC values were high, irrespective of the population origin. The reason lies probably in the fact that most of the population come from the parts of Bosnia that are geographically similar to the continental part of Dalmatia. Furthermore, more than 15 years passed since the immigrants settled in Knin, and it could be expected that during this time some differences in mentality and habits faded. Together with the similarly low health awareness and the absence of preventive programs, this leads to extremely high DMFT and SIC indices.

The reported post-war DMFT values for central Dalmatia (costal and inner parts) were 21.73 and 23.73 for the ages 35-44 and 65-74, respectively (15). This is in concordance with our results. Although we examined the adult population, we here refer to the results of DMFT index among 12-year olds in order to make easy comparisons between countries. The tendency of increasing DMFT index among 12-year olds in Croatia has been reported and it increased from 2.6 in 1991 to 3.5 in 1999. Moreover, in 2008, Jurić et al. reported DMFT of 6.67, and SIC 10.89 among 12-year-olds in another Croatian area also seriously affected by the war (Petrinja) (16, 17). This situation calls for urgent preventive measures planning and implementation, especially in certain parts of the country.

In 2013 Croatia became a member of the EU, and when comparing DMFT values with other European countries the results are alerting. For example, the most recent DMFT scores in the nearest EU countries among 12-year olds are according to the Malmö University Oral Health database (18) as follows: Slovenia 1.8 (1998), Italy 1.1 (2004), Austria 1.0 (2002). The score is very similar to the scores in former socialist countries that either underwent or are still going through economic transition, irrespective of their membership in the EU: Albania 3.1 (2005), Bosnia and Herzegovina 4.2 (2004), Bulgaria 3.1 (2008), Hungary 3.3 (2001), Latvia 3.4 (2004), Lithuania 3.7 (2005), Macedonia 3 (1999), Po-

smanjila i koncentrirana je među 20 posto populacije (19). Suprotno tomu, u populaciji koju smo mi proučavali karijes je prisutan među 49 posto ispitanika i, kada se uzima u obzir da je svaki pojedinac imao u prosjeku 10 izvađenih zuba, prevalencija karijesa čak je i veća ako se usporedi s razvijenim zemljama. Itekako zabrinjava to što od ukupne proučavane populacije samo 66,9 posto ima funkcionalnu denticiju (21 – 32 zuba), pa će se u bližoj budućnosti teško ostvariti čak i ciljevi SZO-a za 2020-tu godinu. (20). Rezultat ovog istraživanja pokazao je povećanje CPI-a s dobi i kod pušača. Ovi rezultati slažu se s opisanim povećanjem prevalencije i progresije parodontnih bolesti s dobi i opisanim povećanim rizikom od razvoja parodontnih bolesti kod pušača (21, 22). Naše istraživanje pokazalo je također da je parodontni status bio bolji kod ispitanika s višim stupnjem obrazovanja. Budući da je obrazovanje indikativno za socijalno-ekonomski status, ovaj nalaz je očekivan, premda bi u ovoj populaciji visok postotak pušača mogao obrazovanje i socijalno-ekonomski status učiniti manje indikativnim (23). Opisano je da su genetske varijacije pacijenata vezane za određene patogene kod pojedinih etničkih grupa i imaju važnu ulogu u patogenezi parodontnih bolesti (24, 25). U proučavanoj populaciji nije pronađena razlika u parodontnom statusu između domaćega i doseljenog stanovništva. Usporedili smo i naše CPI rezultate za grupu od 35 do 44 godine s CPI podacima u globalnoj banci podataka SZO-a koja se nalazi na japanskome Sveučilištu Niigata (26). Pregledani su CPI podatci za dobne grupe od 15 do 19 godina, od 35 do 44 godine i od 65 do 74 godine (26). U tablici 5. nalaze se CPI podatci za grupu od 35 do 44 godina za različite europske zemlje. Može se uočiti da je velik postotak populacije u Kninu i okolici (16 %) imao CPI 0, kao najvišu zabilježenu vrijednost. U glavnom gradu Hrvatske, u Zagrebu, uočeno je od 1986. do 2000. značajno poboljšanje parodontnog statusa (27), ali je najviši postotak pojedinaca s vrijednošću 0 bio u 2000. samo 6 posto. Pretpostavljamo da se to može pripisati visokom KEP indeksu među stanovnicima Knina i okolice, pogotovo po broju zuba koji nedostaju. Postotak osoba s krvarenjem gingivalnog sulkusa nakon sondiranja (16 %) sličan je nekim slabijim europskim ekonomijama – onima u Grčkoj, Rumunjskoj, Španjolskoj, ali i u Danskoj. Kamenac bez parodontnih džepova pronađen je kod 43,6 posto ispitanika, što je u razini s Grčkom, Italijom, Portugalom, Slovačkom i Španjolskom. Općenito u razvijenijim državama, ali i u hrvatskome glavnom gradu, postotak osoba s plitkim parodontnim džepovima mnogo je veći nego u populaciji koju smo proučavali. Naši rezultati su na razini zemalja koje su također prošle tranziciju ili ubrajaju se među ekonomski slabije zemlje. To su Grčka, Mađarska, Poljska, Portugal, Španjolska i Turska. Ovo se može objasniti manjim gubitkom zuba zbog karijesa i drugih razloga u razvijenim zemljama, što rezultira s manje isključenih sekstanata.

Iz rezultata dobivenih u našem istraživanju zaključujemo da populacija u Kninu i okolici ima vrlo loš oralni status, ali ne tako loš parodontni status, što se mora interpretirati u kontekstu ekstremno visokoga broja zuba koji nedostaju zbog karijesa (prosječni E za cijelu populaciju gotovo je 10).

land 3.2 (2003), Serbia 2.9-7.8 (1994), Slovakia 4.3 (1998). It was well documented in previous epidemiology studies that DMFT index presents a relevant indicator of oral health and socio-economic status, which is also confirmed by our study (14). In industrialized western countries the caries prevalence decreased and is concentrated in 20% of the population (19). On the contrary, in the population we studied, caries was present in 49% of the subjects, and when taking into consideration that every individual had on average almost 10 teeth extracted, the prevalence of caries is even higher when compared to the developed countries. It is also very distressing that of the total examined population, only 66.9% had functional dentitions (21-32 teeth), which makes the WHO goal for the year 2020 hardly achievable in the near future (20).

The results of this study show the increasing CPI with age and in smokers. These findings are consistent with the reported increasing prevalence and progression of periodontal disease with age and reported greater risk of developing periodontal disease in smokers (21, 22). Our study also showed that the periodontal status was better in subjects with higher education. Since the education is indicative of socioeconomic status, this finding is expected. Nevertheless, in our population the high percentage of smokers could make the education and socioeconomic status factor less indicative (23).

It was documented that the genetic variations related to patients and pathogens in certain ethnic groups play a significant role in the pathogenesis of periodontal diseases (24, 25). However, the differences between domicile and immigrant group were not significant concerning periodontal status.

Furthermore, we compared our CPI results for the age group 35-44 with CPI data in the WHO Global Oral Health data bank located at Niigata University, Japan (26). An overview of CPI data in the bank is made for the age groups 15-19 years, 35-44 years and 65-74 years (26).

Table 5 lists the CPI data for the age group 35-44 years in different European countries. It can be noticed that a very high percentage of the population of Knin has score 0 as the highest CPI score: 16%. In Zagreb, the capital of Croatia, a significant improvement in periodontal status was observed from 1986 to 2000 (27), but the percentage of persons having score 0 as the highest score was in 2000 only 6%. We assume that this can be partly attributed to a very high DMFT index among inhabitants of Knin, especially the high number of missing teeth. The percentage of persons exhibiting bleeding on probing (16%) was similar to some weaker European economies: Greece, Romania and Spain, but Denmark as well. Calculus without periodontal pockets was observed in 43.6% which is in the range of Greece, Italy, Portugal, Slovakia and Spain. In general, in more developed countries, as well as in the Croatia's capital Zagreb, the percentage of persons having shallow and deep pockets is much higher than in the population we have studied. Our results are in range of the countries that also went through transition or belong to the economically weaker countries: Greece, Hungary, Poland, Portugal, Spain and Turkey. This can also be explained by fewer teeth lost due to caries and other rea-

Tablica 5. CPI vrijednosti iz našeg istraživanja usporedene s recentnim vrijednostima nekih europskih zemalja te u hrvatskome glavnom gradu Zagrebu; za dobnu grupu od 35 do 44 godine – podaci korišteni iz ref. 27 i 28.
Table 5 CPI scores from our study compared to the most recent available scores in some european countries and in Croatian capital Zagreb for the age group 35-44. The data used are from the references 27 and 28

Država • Country	WHO područje • WHO Region	Godina • Year	Dobna grupa • Age Group	Broj zuba • Number of Dentate	% osoba koje imaju najviše vrijednosti • % of persons who have as the highest score				
					0	1	2	3	4
Bjelorusija • Belarus	EURO	1986	35-44	327	0	0	23	45	31
Bjelorusija • Belarus	EURO	2000/2001	35-44	393	0	0	24	63	13
Belgija • Belgium	EURO	1997	35-44	111	1	5	30	34	30
Hrvatska (Zagreb) • Croatia (Zagreb)	EURO	1986	35-44	2096	0	0	24	59	17
Hrvatska (Zagreb) • Croatia (Zagreb)	EURO	2000	35-44	412	6	6	41	32	15
HRVATSKA KNIN • CROATIA KNIN	EURO	2010	35-44	91	16	16	13.6	19.1	5.3
Danska • Denmark	EURO	2000/01	35-44	762	8	16	41	29	6
Estonija • Estonia	EURO	1987	35-44	434	0	0	34	53	13
Francuska • France	EURO	1989	35-44	88	9	6	63	13	10
Njemačka • Germany	EURO	2005	35-44	904	1	12	14	52	21
Grčka • Greece	EURO	2005	35-44	1182	10	16	47	24	3
Mađarska • Hungary	EURO	2003	35-44	743	11	5	57	22	6
Italija • Italy	EURO	1985	35-44	21352	3	4	45	36	12
Nizozemska • Netherlands	EURO	1986	35-44	418	4	6	34	48	7
Norveška • Norway	EURO	2003	35	149	1	19	13	58	8
Poljska • Poland	EURO	1989	35-44	601	9	7	57	21	6
Portugal • Portugal	EURO	1984	35-44	616	3	0	47	38	8
Rumunjska • Romania	EURO	2009	15-19	362	26	14	53	8	0
Ruska Federacija • Russian Fed.	EURO	1991	35-44	85	0	1	15	54	29
Slovačka • Slovakia	EURO	2000	34-49	147	8	5	44	29	15
Slovenija • Slovenia	EURO	1987	35-44	406	4	6	36	36	19
Španjolska • Spain	EURO	2005	35-44	540	15	13	47	22	4
Turska • Turkey	EURO	1987	35-44	494	3	24	38	29	6
Ujedinjeno Kraljevstvo • United Kingdom	EURO	1988	35-44	603	4	1	20	62	13
Srbija (Vojvodina) • Serbia (Vojvodina)	EURO	1987	35-44	439	1	1	34	48	16

sons in more developed countries which results in fewer sextants excluded.

From the obtained results of our study we can conclude that the population of Knin and the surrounding area exhibit very bad dental status, and not as bad periodontal status which must be interpreted in the context of extremely high number of missing teeth due to caries (average M for the whole population is almost 10).

Zaključak

Općenito loš oralni status može se pripisati posljedica rata 1990-ih godina, ekonomskim promjenama i tome što nema nacionalnog programa za promicanje oralnoga zdravlja. Rezultat ovog istraživanja, uz epidemiološke rezultate drugih područja u Hrvatskoj, trebao bi se koristiti u planiranju i organiziranju brige za oralno zdravlje na nacionalnoj razini. Kod planiranja i primjene nacionalnih programa zdravlja, trebala bi se uzeti u obzir specifičnost epidemioloških podataka za svako područje posebno.

Sukob interesa

Nije bilo sukoba interesa.

Conclusion

In general, bad oral status can be attributed to the consequences of the war in the 1990s, the economic transition, and the lack of a national program for oral health promotion. The results of our study, along with the results of epidemiological studies covering other Croatian regions, should be used in planning and organizing oral health care on the national level. In planning and implementation of the national oral health program, the specific epidemiological data for every region should be considered.

Conflict of interest

None declared.

Abstract

The aim: Epidemiologic studies in many countries show uneven distribution of oral diseases (primarily caries) within the population. This is why more studies are oriented towards specific regions or subpopulations instead of large scale national surveys. The major purpose of this cross sectional study was to obtain relevant data about the oral status of the population of Knin and its surroundings according to the WHO criteria. **Subjects and methods:** The study included 414 participants aged between 18 and 65. The recorded variables included general anamnestic data, extraoral status, oral mucosa status, temporomandibular joint status, dental, periodontal and prosthetic status, and the need for dental restoration. The comparison between different groups regarding age, gender, educational level and origin was made. **Results:** DMFT index was 17.3 – with on average 1.7 caries, 6.2 fillings, and 9.4 teeth extracted. SIC index equaled 26.4. The difference was significant regarding the level of education and age ($p < 0.001$). The percentages of individuals with the highest CPI scores from 0-4 were 27.3, 16.9, 36.5, 16.4 and 2.9%, respectively. The difference between the age groups in CPI scores was statistically significant, while the differences according to the gender and origin were not significant ($p = 0.001$). **Conclusion:** The population of Knin and the surrounding area exhibited very bad oral status which can be attributed to the consequences of the war in the 1990-ies, the economic transition, and the lack of national program for oral health promotion.

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Key words

Adult; Oral Health Status; Knin, Croatia;
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