

Oral health status of young adults in Serbia – Clinical and non-clinical assessment of undergraduate students in Belgrade

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SUMMARY

Introduction Since 1987, there has been little information on oral health (OH) status of young adults aged 19 to 26 in Serbia. This study aimed to investigate the trends in OH status and OH-related quality of life (OHRQoL) of undergraduate student population in Belgrade in 2012.

Materials and methods The study included a total of 699 students of different study fields who underwent a dental examination, with 530 of them agreeing to an assisted survey and 275 forgoing a periodontal assessment. The survey consisted of six sections – basic information, socio-demographic data, oral healthcare use and habits, risk factors, OH self-assessment and OHRQoL. Clinical assessment was performed using the Decayed, Missing, Filled teeth (DMFT) index; Gingival Index; Clinical Attachment Level; Community Periodontal Index, and Plaque index. OHRQoL was evaluated through a modified OH Impact Profile (OHIP-14).

Results The mean DMFT of the examined population was 10.24 (standard deviation [SD] 5.33). Students from East and South Serbia (DMFT=8.69 [SD=4.93]), technical study field (DMFT=8.84 [SD=4.94]), with mother's having a university degree (DMFT=9.33 [SD=5.15]) and with satisfactory OH (DMFT=8.94 [SD=4.76]) were all significantly associated with lower DMFT. A significantly lower OHRQoL score was observed in students with satisfactory self-reported OH (Score=9.48 [SD=1.44]). The periodontal assessment showed no significant differences across all values of observed indexes.

Conclusion The mean DMFT of Belgrade's young adults' population has decreased from 1987 to 2012 from 12.5 to 10.4. Self-reported OH is significantly associated with both the DMFT values and OHRQoL.

Keywords: oral health status; oral health related quality of life; students; Belgrade

INTRODUCTION

Oral health represents an integral component of general health necessary for the overall physical and mental well-being of an individual [1]. Recently, The Global Burden of Disease (GBD) Study determined that as many as 2.5 billion people have been affected with untreated dental caries, while recent reports suggest the total costs due to dental disease amounted to \$544.41 billion in 2015 [2, 3]. In 2017, the OECD study also indicated that spending on dental treatments in high-income countries accounted for 20% of out-of-pocket health expenditure [4]. In the wake of these data, most dental epidemiology studies have been focusing on gathering information on children and adolescents' oral health status. These form a basis for preventive policy recommendations to lower the socio-economic burden of dental disease in the nearby future, especially in terms of state financed dental care plans. That said, the oral health of some age groups, such as the one of young adults aged 19 to 26 has been unjustifiably disregarded. Certainly, this is one of the most important transition periods of a person's life, particularly seen in university students who are faced with rapid physical and social development [5]. New environments, often away from

home, come with dynamic changes to their lifestyle and can have major influence on their oral and overall health [6]. There are only a handful of reports presenting data on these age groups' dental status and oral health-related quality of life (OHRQoL). In Serbia, the oral health status of student population was evaluated in 1987 as part of a more extensive oral health assessment of general population in Belgrade, when a total of 4943 of students participated in the study [7].

Since then, two different aspects could have had significant implications. Firstly, the economic collapse and wars of the 90' in former Yugoslavia were never explored in terms of the impact they had on this population's oral health status. Secondly, during the country's transition years at the beginning of the 21st century, a new Health Care Law from 2004 stopped recognizing the oral health care of students aged 19 to 26 as part of a mandatory state-financed health care plan. For the next seven years, around 250,000 students spent out-of-pocket money for their dental treatment.

This study aimed to provide new data on young adults (19 to 26 years of age) oral health status in the Republic of Serbia in 2012 and give a comprehensive overview of their OHRQoL.

MATERIAL AND METHODS

The study comprised an assisted oral health interview, a dental status evaluation and a periodontal assessment of the participating population.

The participants in this cross-sectional study were recruited onsite between October 2011 and January 2012 at the University of Belgrade, Republic of Serbia. A total of 699 undergraduate students aged 19 to 26 gave a verbal and written informed consent and agreed to schedule a dental examination at the Department of Restorative Dentistry, School of Dental Medicine, University of Belgrade. The study population included students from the fields of medical (n=173), social (n=290), life (n=16) and technical (n=116) sciences as well as other public and private higher education institutions located in Belgrade (n=104). All students of the School of Dental Medicine, University of Belgrade were excluded from the study to avoid selection bias [8].

Of the total number of participating students, 530 agreed to an assisted oral health interview. The questionnaire used in this study comprised six sections and represented a modified version of the European Global Oral Health Indicators Development Project's (EGOHID II) "Full Standard Oral Health Interview Questionnaire for Adults" [9]. The survey was conducted at the Department of Conservative Dentistry, School of Dental Medicine, University of Belgrade before the dental status evaluation procedure. Section 1 of the questionnaire collected basic screening information (age, sex, childhood residence and faculty attended). Section 2 focused on socio-demographic variables customized for the student population – year(s) of study; parents' education status (without a University degree/ with a University degree); parents' employment status (employed/ unemployed/ inactive); means of financing the studies (by parents/ scholarship/ student loan/ self-financed/ other). Section 3 assessed the oral health care use and oral hygiene habits – last dental visit (within the past 12 months/ more than 12 months ago/ not sure); reasons of the last visit (check-up/ routine treatment/ emergency treatment/ prosthodontic reasons/ orthodontic reasons); dental care provider (private/ public/ not sure); daily tooth brushing frequency (once a day or less/ at least twice a day); toothbrush replacement frequency (monthly/ quarterly/ bi-annual/ annually); usage of fluoride-based toothpaste (yes/ no/ not sure); the use of interdental brush or floss (yes/ no). Section 4 provided data on the risk factor habits – number of food and drink meals per day (up to three times a day/ more than three times a day); sweetened beverages consumption (yes, daily or occasionally/ never/ not sure); cigarette smoking and alcohol intake frequency (yes, regularly or occasionally/ never). Section 5 gave inputs on the oral health self-assessment status (satisfactory/ unsatisfactory). Section 6 gathered data on dental anxiety presence and the OHRQoL, using a modified OHIP-14 instrument which encompassed eight items – difficulties with eating and drinking due to teeth issues; toothache and painful gums experience; bad breath experience; embarrassment because of the appearance of teeth; avoiding smiling/laughing because of the appearance of teeth; avoiding conversation with other

individuals because of the appearance of teeth; difficulties with studying and other daily activities due to teeth issues; avoiding any form of social activity due to teeth issues. The frequency of each item was measured using a 4-point Likert scale ("never" = 1, "sometimes" = 2, "often" = 3, and "daily" = 4). Based on the OHRQoL students were divided into two groups – one with a low OHRQoL (at least one answer on any of the eight items was either "sometimes", "often" or "daily") and one without a low OHRQoL [10].

The maximum possible OHRQoL score in this study was 32 for the DMFT (DT – decayed teeth; MT – missing teeth; FT – filled teeth) index correlation and 28 for the GI (Gingival Index) and PI (Plaque Index) indexes. Reliability analysis based on Cronbach's alpha was initiated to determine the validity and internal consistency of the given OHRQoL survey [11]. In two instances (DMFT/ GI, PI), Cronbach's alpha for standardized items was 0.78, and 0.73, respectively. The average inter-item correlation was 0.31 (DMFT) and 0.28 (GI, PI; "bad breath" item was excluded after item correction), with no negative correlations and following the recommended threshold of 0.2 [10, 12].

Dental status evaluation

Fourth and fifth-year dental students performed the clinical dental status evaluation with a senior clinician's verification at the Department of Restorative Dentistry. A total of 699 participants were examined. The assessment followed the standard World Health Organization (WHO) Guidelines and the Oral Health Clinical Surveys Guidelines of the EGOHID II project [13, 14]. The DMFT index was used to measure dental caries experience and a "Classification of Lesions of the Exposed Tooth Surfaces" system proposed by Mount et al. to record the tooth sites affected by caries (Site 1 – pits, fissures and minor defects on exposed enamel surfaces of all teeth; Site 2 – approximal enamel surfaces immediately cervical to the contact area between any pair of adjacent teeth; Site 3 – the cervical one-third of the crown around the full circumference of any tooth or, following a gingival recession, the exposed root surface) [15]. All the assessments were completed visually and using a standard dental explorer and mirror.

Periodontal assessment

Fifth-year dental students performed the periodontal assessment with a senior periodontist's verification at the Department of Periodontology and Oral Medicine, School of Dental Medicine, University of Belgrade. A total of 275 participants were examined. The assessment followed the standard WHO Guidelines and the Oral Health Clinical Surveys Guidelines of the (EGOHID II) project [13, 14]. The evaluation included the identification of changes to soft gingival tissues – gingivitis (yes, type of gingivitis – catarrhal, acute ulcero-necrotic, hyperplastic, gingival fibromatosis, desquamative/ no) and periodontal disease presence (yes, type of periodontitis – chronic periodontitis, acute periodontitis, necrotizing periodontitis, periodontitis as a manifestation of systemic diseases/ no). Three indices were used to determine the state of periodontal

tissue – the Loe & Silness Gingival Index – GI; the clinical attachment level – CAL; a community periodontal index – CPI, modified for assessing periodontal pocket depth if present. All measurements were taken on six teeth (code numbers 16, 12, 24, 36, 32, 44), on four surfaces (mesial, distal, lingual and buccal) and with a WHO Community Periodontal Index probe. Additionally, the Silness & Loe Plaque Index - PI was used to record the position and the amount of dental plaque present in gingival and sub-gingival areas of examined teeth.

Statistical Analysis

The DMFT, GI, CAL, CPI and PI indexes are shown in their mean and standard deviation values accordingly. The Mann-Whitney U test was used to compare data between two and the Kruskal-Wallis test to compare more than two groups of students and in compliance with the interview survey results. *P-values* <0.05 were considered statistically significant. The chi-square and Fisher's exact tests were applied to compare the proportion of decayed, filled, extracted and healthy teeth across two or more groups of students and in compliance with the interview survey results. *P-values* <0.05 were considered statistically significant. All the statistical analyses were carried out with the XLSTAT statistical software Trial Version 2021.1.1.1082 (Addinsoft, Paris, France, EU).

RESULTS

As shown in Table 1, the mean DMFT index of the total number of participating students ($n=699$) was 10.24 (standard deviation [SD] 5.33; range = 0-31). There were no significant differences in DMFT values between female and male students in terms of socio-demographic aspects covered in this study, while obvious ones could be seen across other observed variables (Table 2). The lowest mean DMFT was seen in students originally from the region of East and South Serbia. Mean DMFT values did not differ significantly between Belgrade, West and Central Serbia and other regions and countries. Students studying technical sciences had a significantly lower mean DMFT index, followed closely by medical field students. Life science students and ones from other higher education institutions were impacted by the highest values of the DMFT index. Mother's education level was strongly associated with the DMFT score, with lower scores found among students whose mother possessed a university degree.

All the variables used to determine students' oral health behavior showed no significant differences between their mean DMFT values, except for the time of the last dental visit. Students who visited a dental professional less than a year ago had a higher mean DMFT of 10.61 (SD 5.11) compared to the ones who did it more than a year ago – 8.64 (SD 4.83) The results presented in Table 3 also showed no significant differences in DMFT values of students receiving dental care from private dental professionals opposite to the ones receiving it from dental professionals working in public clinics.

Table 1. Mean DMFT value

Tabela 1. Srednje vrednosti KIP indeksa

Index	N broj	Mean (SD) Srednja vrednost (SD)
DMFT KIP indeks	699	10.24 (5.33)

Table 2. Student's socio-demographic context of the mean DMFT index values

Tabela 2. Sociodemografske karakterisitke studentske populacije u funkciji KIP-a

Variable Promenljiva	n (%) broj	DMFT mean (SD) KIP (SD)	P
Sex/Pol			
Male/muški	185 (34.9)	10.07 (5.18)	0.994
Female/ženski	344 (65.1)	9.98 (5.07)	
Region/Regija			
Belgrade/Beograd	223 (42.1)	10.26 (4.95)	< 0.05 (0.046)
West and Central Serbia Zapadna i Centralna Srbija	152 (28.7)	10.29 (5.39)	
East and South Serbia Istočna i Južna Srbija	89 (16.8)	8.69 (4.93)	
Other Ostalo	66 (12.4)	10.29 (4.91)	
Study field / Oblast studiranja			
Medical / Medicinske nauke	151 (28.5)	9.67 (5.01)	< 0.05 (0.027)
Social / Društvene nauke	231 (43.6)	10.29 (5.09)	
Life / Prirodne nauke	11 (2.1)	11.00 (4.27)	
Technical / Tehničke nauke	82 (15.5)	8.84 (4.94)	
Other/Ostalo	55 (10.3)	11.33 (5.46)	
Mother's education / Obrazovanje majke			
<University degree <Fakultetsko	333 (62.8)	10.41 (5.03)	< 0.05 (0.013)
University degree Fakultetsko	197 (37.2)	9.33 (5.15)	

Table 3. The impact of student's oral health behaviour on their mean DMFT index values

Tabela 3. Uticaj odnosa studenata prema oralnom zdravlju na vrednosti KIP-a

Variable Promenljiva	n (%) broj	DMFT mean (SD) KIP (SD)	P
Last dental visit / Poslednja poseta stomatologu			
< 1 year / < 1 godine	353 (70.5)	10.61 (5.11)	< 0.001
> 1 year / > 1 godine	148 (29.5)	8.64 (4.83)	
Daily tooth brushing / Svakodnevno pranje zuba			
Once a day or less Jednom dnevno i manje	49 (9.4)	10.06 (5.12)	0.981
More than once a day Više od jednom dnevno	475 (90.6)	9.98 (5.09)	
Interdental brushing / Interdentalno pranje zuba			
Regularly/Occasionally Redovno/Ponekad	286 (54.8)	10.25 (5.28)	0.161
Never/Nikada	236 (45.2)	9.7 (4.87)	
Use of fluoride tooth paste / Upotreba fluoridne paste za zube			
Yes/Da	392 (75.7)	10.04 (5.13)	0.841
No / Not sure / Ne / Nisam siguran(a)	126 (24.3)	10.15 (5.06)	
Dental care / Stomatološka nega			
Private/ Privatni stomatolog	205 (59.9)	11.03 (5.2)	0.067
Public/ Državni stomatolog	137 (40.1)	10.07 (5.01)	

When looking at various risk factor habits presented in Table 4, only the alcohol intake significantly influenced the mean DMFT of students. The students who consumed alcohol on a daily/occasional level had a significantly lower DMFT index than those who stated never to drink alcohol (9.71 & 10.69).

Students who deemed their oral health satisfactory had a lower DMFT of 8.94 (SD 4.76) than those unsatisfied with it – DMFT of 12.13 (SD 5.18). The same trend could be seen when comparing the average values of the OHRQoL score – satisfied students with a score of 9.48 (SD 1.44) and unsatisfied ones with a mean score of 11.11 (SD 2.85). Students without low OHRQoL showed no clear advantages to the ones with reported low OHRQoL. The same pattern was visible in students who confirmed they suffered from dental anxiety compared to those who did not (Table 5).

Table 4. Risk habit determinants of the student's mean DMFT
Tabela 4. Faktori rizika i vrednost KIP-a kod studenata u Beogradu

Variable Promenljiva	n (%) broj	DMFT mean (SD) KIP (SD)	P
Daily intake of food and drinks / Dnevni unos hrane i pića			
Up to three times / Do tri puta	146 (28.6)	9.31 (4.76)	0.063
> 3 times / > 3 puta	365 (71.4)	10.32 (5.18)	
Sweetened beverages intake / Unos zaslađenih pića			
Daily/Svakodnevno	183 (34.9)	9.99 (4.88)	0.672
Occasionally/Ponekad	248 (47.3)	10.10 (5.02)	
Never/Nikada	93 (17.8)	9.67 (5.70)	
Smoking / Pušenje			
Daily/Occasionally Svakodnevno/Ponekad	96 (19.0)	9.54 (4.82)	0.382
Never/Nikada	410 (81.0)	10.19 (5.12)	
Alcohol / Alkohol			
Daily/Occasionally Svakodnevno/Ponekad	345 (67.5)	9.71 (5.09)	< 0.05 (0.028)
Never/Nikada	166 (32.5)	10.69 (5.04)	

Table 5. DMFT index values in terms of self-assessed oral health, dental anxiety and OHRQoL

Tabela 5. Vrednosti KIP, GI and PI indeksa u odnosu na samoprocenu oralnog zdravlja, strah od odlaska stomatologu i vrednost KŽPsOZ-a

Variable Promenljiva	n (%) broj	DMFT mean (SD) KIP (SD)	P
Self-assessed oral health / Samoprocena oralnog zdravlja			
Satisfactory Zadovoljavajuće	338 (66.3)	8.94 (4.76)	< 0.001
Unsatisfactory Nezadovoljavajuće	172 (33.7)	12.13 (5.18)	
Dental anxiety / Strah od odlaska stomatologu			
Yes/Da	158 (31.0)	10.24 (5.12)	0.608
No/Ne	351 (69.0)	9.92 (5.08)	
OHRQoL / KŽPsOZ			
With Low / Sa niskom	131 (24.9)	9.39 (5.41)	0.088
Without Low / Bez niskog	396 (75.1)	10.20 (4.99)	
OHRQoL mean (SD) / KŽPsOZ srednja vrednost (SD)			
Self-assessed oral health / Samoprocena oralnog zdravlja			
Satisfactory Zadovoljavajuće	338 (66.3)	9.48 (1.44)	< 0.001
Unsatisfactory Nezadovoljavajuće	172 (33.7)	11.11 (2.85)	

Table 6 depicts data on the status (decayed, filled, extracted, healthy) of as many as 14,840 teeth (530 × 28)

evaluated in context of several questionnaire aspects – sex (529 × 28); region (530 × 28); study field (530 × 28); mother's education (530 × 28); self-assessed oral health (510 × 28); last dental visit (501 × 28) and dental anxiety (509 × 28). Significant differences are seen in almost every percentage comparison of decayed, filled, extracted and healthy teeth. Female and male students had approximately the same proportion of healthy and extracted teeth (≈68%; ≈3%), with the female ones having significantly more filled and significantly less decayed teeth. Medical students reported the lowest number of decayed teeth, while the same could be said of students originally from East and South Serbia. Greatest differences were seen in numbers of decayed and healthy teeth in groups of students who perceived their oral health as satisfactory opposite to those perceiving it as unsatisfactory. There were also no significant differences between the proportions of filled teeth in students whose mothers had a university degree and those whose mothers did not.

Among the teeth most affected, the first and second molars in both the upper and lower jaw had the highest frequency (percentage) of dental caries (Figure 1a). The least affected teeth were the ones in the lower jaw's inter-canine region (Figure 1b). On the other hand, the teeth surfaces having dental caries were more evenly distributed across different tooth groups (Figure 2). The prevalence of site one lesions was the highest in molars, while the site two lesions dominated in premolars and the upper jaw's inter-canine region. Site three lesions were featured mostly in lower jaw premolars.

Based on the periodontal assessment of 275 students, gingivitis was identified in 99 (36%) and periodontal disease in 20 (7.3%) of them. The most prominent type of gingivitis was the catarrhal one (Figure 3a). Localized chronic periodontitis was the most prevalent one in terms of periodontal disease presence (Figure 3b). As displayed in Table 7, the mean values of all analyzed periodontal indexes were under 1.0 (n = 275).

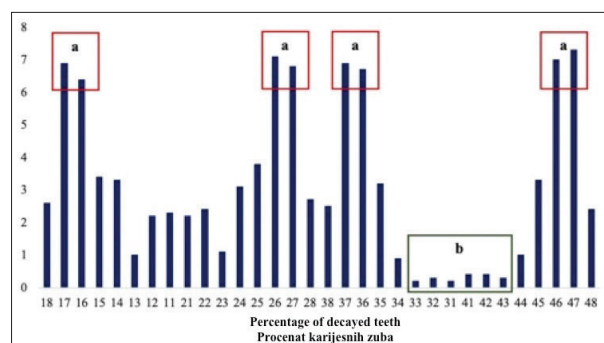


Figure 1. Percentages of decayed teeth per tooth group: a) highest percentages of decayed teeth, b) lowest percentages of decayed teeth.

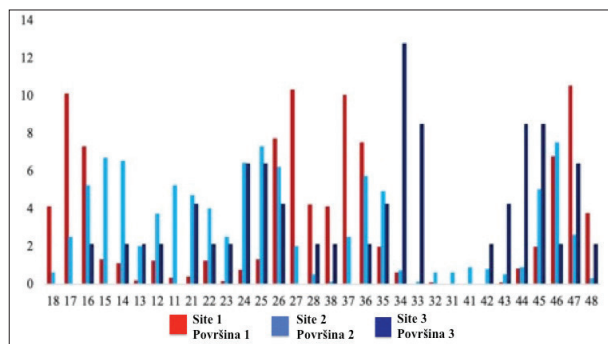
Numbers on the x-axis are a representation of the standard human dentition code system

Slika 1. Procenat karijesnih zuba: a) najviši procenat karijesnih zuba, b) najniži procenat karijesnih zuba.

Brojevi na x-osi predstavljaju šifre 32 zuba prisutna u humanoј denticiji.

Table 6. Proportion of decayed, filled, extracted and healthy teeth across different questionnaire aspects**Tabela 6.** Zastupljenost karijesnih, plombiranih, ekstrahovanih i zdravih zuba prema različitim aspektima u okviru predloženog upitnika

Variable Promenljiva	n (%) DT n (%) K	n (%) FT n (%) P	n (%) ET n (%) E	n (%) HT n (%) Z
Sex/Pol ($X^2 p < 0.01$)				
Male/Muški	686 (13.24)	866 (16.72)	150 (2.9)	3478 (67.14)
Female/Ženski	971 (10.08)	1784 (18.52)	301 (3.13)	6576 (68.27)
p	< 0.01	< 0.01	0.452	0.161
Region/Regija ($X^2 p < 0.01$)				
Belgrade/Beograd	690 (11.05)	870 (13.93)	140 (2.24)	4544 (72.77)
West and Central Serbia / Zapadna i Centralna Srbija	442 (10.39)	816 (19.17)	107 (2.51)	2891 (67.93)
East and South Serbia / Istočna i Južna Srbija	248 (9.95)	362 (14.53)	40 (1.61)	1842 (73.92)
Other/Ostalo	246 (13.31)	277 (14.99)	29 (1.57)	1296 (70.13)
p	< 0.05	< 0.01	< 0.05	< 0.05
Study field / Oblast studiranja ($X^2 p < 0.01$)				
Medical / Medicinske nauke	446 (10.55)	779 (18.42)	107 (2.53)	2896 (68.5)
Social / Društvene nauke	770 (11.9)	1215 (18.78)	245 (3.79)	4238 (65.52)
Life / Prirodne nauke	38 (12.34)	70 (22.73)	9 (2.92)	191 (62.01)
Technical / Tehničke nauke	253 (11.02)	393 (17.12)	48 (2.09)	1602 (69.77)
Other/Ostalo	192 (12.47)	247 (16.04)	54 (3.51)	1047 (67.99)
p	< 0.05	< 0.05	< 0.01	< 0.05
Mother's education / Obrazovanje majke ($X^2 p < 0.01$)				
<University degree/ <Fakultetsko	1117 (11.98)	1662 (17.82)	311 (3.34)	6234 (66.86)
University degree/ Fakultetsko/	523 (9.48)	960 (17.4)	135 (2.45)	3898 (70.67)
p	< 0.01	0.519	< 0.05	< 0.01
Self-assessed oral health / Samoprocena oralnog zdravlja ($X^2 p < 0.01$)				
Satisfactory/Zadovoljavajuće	821 (8.67)	1631 (17.23)	187 (1.98)	6825 (72.12)
Unsatisfactory/Nezadovoljavajuće	779 (16.18)	927 (19.25)	154 (3.2)	2956 (61.38)
p	<0.01	<0.01	<0.01	<0.01
Last dental visit / Poslednja poseta stomatologu ($X^2 p < 0.01$)				
< 1 year / < 1 godine	1062 (10.47)	1948 (19.71)	282 (2.85)	6592 (66.69)
> 1 year / > 1 godine	508 (12.26)	583 (14.07)	113 (2.73)	2940 (70.95)
p	< 0.05	< 0.01	0.696	< 0.01
Dental anxiety/ Strah od odlaska stomatologu ($X^2 p < 0.01$)				
Yes/Da	562 (12.7)	716 (16.18)	151 (3.41)	2995 (67.7)
No/Ne	1018 (10.36)	1794 (18.25)	246 (2.5)	6770 (68.88)
p	< 0.01	< 0.01	< 0.01	0.161

**Figure 2.** Distribution of caries lesion sites across the whole dentition (%).

Site 1 – pits, fissures and minor defects on exposed enamel surfaces of all teeth; Site 2 – approximal enamel surfaces immediately cervical to the contact area between any pair of adjacent teeth; Site 3 – the cervical one-third of the crown around the full circumference of any tooth or, following gingival recession, the exposed root surface. Numbers on the x-axis are a representation of the standard human dentition code system

Slika 2. Distribucija površina zuba zahvaćenih karijesom (%).

Površina 1 – jamice, fisure i okluzalne površine bočnih zuba; površina 2 – aproksimalne površine zuba; površina 3 – gingivalna trećina zuba. Brojevi na x-osi predstavljaju šifre 32 zuba prisutna u humano dentitiji.

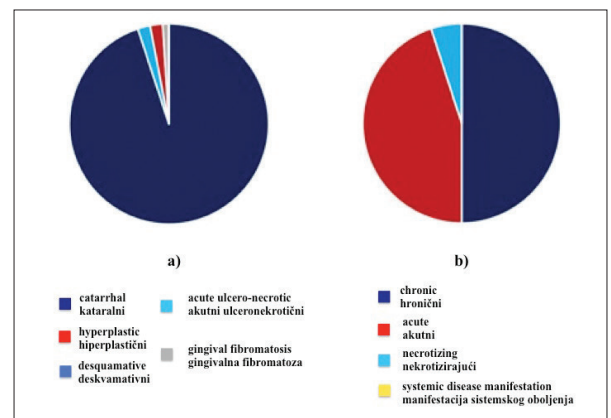
**Figure 3.** Results of periodontal assessment: a) distribution of gingivitis per type, b) periodontal disease distribution per type
Slika 3. Rezultati procene stanja parodonticijuma: a) distribucija različitih tipova gingivitisa, b) distribucija različitih tipova parodontopatija

Table 7. Mean of the GI, CAL, CPI and PI indexes for the total population of students**Tabela 7.** Srednje vrednosti GI, NPE, CPI i PI indeksa za ukupnu populaciju učesnika

Index Indeks	n	Mean (SD) Srednja vrednost (SD)
GI GI	275	0.51 (0.5)
CAL NPE	275	0.14 (0.38)
CPI* CPI*	275	0.26 (0.6)
PI PI	275	0.55 (0.47)

Table 8. GI and PI index values in terms of self-assessed oral health, dental anxiety and OHRQoL**Tabela 8.** Vrednosti KIP, GI and PI indeksa u odnosu na samoprocenu oralnog zdravlja, strah od odlaska stomatologu i vrednost KŽPsOZ-a

Variable Promenljiva	n (%) broj	GI mean (SD) GI (SD)	P
Self-assessed oral health/ Samoprocena oralnog zdravlja			
Satisfactory/Zadovoljavajuće	93 (62.4)	0.47 (0.56)	0.055
Unsatisfactory/Nezadovoljavajuće	56 (37.6)	0.61 (0.53)	
Dental anxiety / Strah od odlaska stomatologu			
Yes/Da	37 (25)	0.6 (0.59)	0.264
No/Ne	111 (75)	0.49 (0.53)	
OHRQoL / KŽPsOZ			
With Low / Sa niskim	101 (65.2)	0.54 (0.54)	0.257
Without Low / Bez niskog	54 (34.8)	0.46 (0.54)	
PI mean (SD) / PI (SD)			
Self-assessed oral health/ Samoprocena oralnog zdravlja			
Satisfactory/Zadovoljavajuće	93 (62.4)	0.56 (0.51)	0.300
Unsatisfactory/Nezadovoljavajuće	56 (37.6)	0.60 (0.43)	
Dental anxiety / Strah od odlaska stomatologu			
Yes/Da	37 (25)	0.6 (0.51)	0.818
No/Ne	111 (75)	0.56 (0.47)	
OHRQoL / KŽPsOZ			
With Low / Sa niskim	101 (65.2)	0.59 (0.47)	0.308
Without Low / Bez niskog	54 (34.8)	0.53 (0.49)	

No significant differences were found between the effect of self-assessed oral health, dental anxiety, and the OHRQoL on periodontal health of participating students (Table 8).

DISCUSSION

Mean DMFT score of the student population examined in our study was above 10 (10.24). The presented findings indicate that the lower average DMFT index value correlates to students from East and South Serbia, the technical study field, whose mothers possess a university degree, students who drink alcohol regularly and regard their oral health as satisfactory. Significantly higher DMFT index was seen in students who made a dental visit during the last 12 months. The nature of the utilized dental care, private or public, seems to play a minor role. Opposite to the proportion of decayed or filled teeth, sex and dental anxiety did not have a significant impact. Tooth brushing, interdental cleaning, use of fluoride toothpaste, sweetened beverages consumption, smoking and OHRQoL appear

to have little effect on the students' DMFT index values. As a parameter, a lower OHRQoL score that leans toward the absence of OHRQoL issues corresponds tightly with a satisfactory view students have of their oral health. On the other hand, the proportion of decayed, filled, extracted and healthy teeth in the examined population and its relation to the questionnaire offers a somewhat different perspective. Lower proportion of decayed teeth is strongly related to female students, students originally from East and South Serbia and the ones studying medical sciences. The same could be said of those whose mothers have higher level of education (university degree), who have visited dentist's office in the past 12 months, do not experience dental anxiety and students who perceive their oral health as satisfactory. It is also apparent that female students, together with those who visited dentist more regularly and did not suffer from dental anxiety, had a significantly higher percentage of filled teeth. When it comes to teeth and tooth surfaces mostly affected by caries, this study's results follow conventional trends [16]. Highest caries prevalence is seen on occlusal surfaces of molars and approximal surfaces of incisors, canines and premolars, especially in the upper jaw. The cervical one-third of canines and premolars of the lower jaw is also the surface significantly affected. In terms of periodontal disease, only a handful of students have been diagnosed with some level of periodontitis. At the same time, the average values of GI, CAL, CPI and PI indices well below one did not indicate severe periodontal issues in the examined population.

The average DMFT index value of the total number of participants in this study was higher than the same score in similar studies. The average DMFT score of 10.24 (SD 5.33) was closest to the DMFT value of undergraduate students of dentistry and medicine in Russia – 7.46 (SD 4.43) followed by a score reported in Korean students – mean DMFT of 6.1 (SD 4.0) [10, 17]. When only the DMFT values of medical students from this study were analyzed, the differences became less apparent (DMFT=9.67 [SD 5.01]). Compared to the population of 30-year-olds in Adelaide, Australia (DMFT=2.1), 18-year-olds in Hong Kong, China (DMFT=1.4 [SD 1.8]) and first-year students in Okayama, Japan (DMFT=2.01 [SD 2.88]) the values were significantly higher [18, 19, 20]. It is also worth mentioning that the number of filled teeth in these studies accounts for most of the DMFT score (80-90%) while in the current study that is not the case – around 60% [10, 19]. Such finding indicates that the undergraduate students in Belgrade have more active caries lesions and extractions than their fellow students elsewhere.

Additionally, Russian students differ significantly between groups of low and without low OHRQoL, which is not typical in Belgrade students (Table 6) [10]. In that sense, undergraduate students in Belgrade were more similar to the 19-year-old Swedes [21]. Average GI index of Belgrade students was almost twice the value reported for Northwest Russian area (0.51 and 0.27) [10]. However, neither value surpassed the score of one, indicating low gum inflammation in both cases.

Compared to the 1987 oral health assessment study, the mean DMFT had decreased from 12.5 in 1987 to 10.2 in

2012. In terms of the percentage of teeth affected by caries, the number had increased from 31% in 1987 to 38% in 2012 [7]. It is not yet clear if this is due to economic reasons, ineffective childhood prevention programs, regulatory issues or the individual-level factors. Further, the current study results advocate that the higher the students' mother education, the more healthy teeth are present. The result also falls in line with suggestions that higher level of mother's education and mother's oral health positively influences oral health during childhood with a prolonged effect [22]. The proportion of filled teeth has also increased from 46.4% to 54.5%, while the percentage of extracted teeth has seen a large decrease from 22.4% to 7.4% [7]. That potentially indicates a move from surgical to more conservative approach in dental treatment of patients from this population during the period between the two studies.

To our knowledge, this is the first study since 1987 in Belgrade and Serbia that gives a comprehensive and detailed overview of the oral health status of students aged 19 to 26. In contrast to most of the other studies, it excluded dental students to bring more generalization to the findings and included various groups of students with different backgrounds and divergent study fields. It also provided a sound basis for further investigation on what effect OHRQoL possibly has on clinical determinants of oral health.

The OHRQoL section of the questionnaire contained only eight questions that related to the original OHIP-14 instrument. Although the internal consistency of the applied OHRQoL survey is acceptable (Cronbach's $\alpha > 0.7$ [0.778; 0.703]) this is still well below the levels that were higher than 0.85 in other studies that applied the original OHIP-14 concept [10, 19]. The other limitation is the fact that dental students performed dental status and periodontal assessments. Besides the senior clinicians' immediate supervision, it remains unclear if the examination quality was uniformly desirable.

CONCLUSION

This study's findings suggest a decrease in the average DMFT of young adults during the last 30 years and a rise in the percentage of decayed teeth on a population level. It is also clear that students in Belgrade had worse overall oral health than their peers from Russia, China, Japan or Sweden. Furthermore, it is indicative that the student's self-awareness on the topic of oral health could have a significant influence on some of the clinical variables examined in this study. Further research is necessary on specific socio-economic and loco-regional determinants that can potentially explain oral health discrepancies between the students from different regions observed in this study. Future studies should also focus on multi-year prospective research into changes that potentially occur over time to the same participants. That is why more active inclusion of private and public dental professionals backed by governing bodies and effective regulation is an essential aspect of a reliable and successful community approach to the nation's wellbeing in terms of oral health.

Acknowledgments: This study was performed as part of the project "Bite into knowledge with healthy teeth" funded by the Ministry of Education, Science and Technology, Republic of Serbia (Project No. 451-02-266/2011-05). We want to thank the Department of Restorative Dentistry staff and the Department of Oral Medicine and Periodontology, School of Dental Medicine, University of Belgrade, for their dedicated work and contribution to this manuscript. We would also like to thank Mrs. Sonja Nektarijevic for the time and work she dedicated to preparing the documentation and the project's overall design.

Conflict of interest: No conflict of interest.

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Received: 10.12.2020 • Accepted: 17.2.2021

Oralno zdravlje mladih u Srbiji – kliničke i nekliničke determinante kod studenata osnovnih studija u Beogradu

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KRATAK SADRŽAJ

Uvod U Srbiji je malo informacija o statusu oralnog zdravlja (OZ) mladih od 19 do 26 godina. Ova studija imala je za cilj da istraži trendove u statusu OZ-a i kvalitetu života povezanom sa oralnim zdravljem (KŽPsOZ) u populaciji studenata osnovnih studija u 2012. godini u Beogradu.

Materijal i metode Studija je obuhvatila ukupno 699 studenata sa različitih fakulteta kod kojih je analiziran status zuba. Njih 530 je uzelo učešće u anketi o oralnom zdravlju, a kod 275 je evaluiran parodontalni status. Anketni upitnik sastojao se iz šest odeljaka – osnovnih ličnih informacija, sociodemografskih podataka, oralnozdravstvenih navika i korišćenja stomatološke službe, faktora rizika, samoprocene OZ-a i KŽPsOZ-a. Klinička procena izvršena je korišćenjem prosečnog karijes indeksa (KIP); gingivalnog indeksa; nivoa pripojnog epitela; parodontalnog i plak indeksa. Procena KŽPsOZ-a sprovedena je kroz primenu modifikovanog OHIP-14 instrumenta.

Rezultati Vrednost KIP-a ispitivane populacije iznosila je 10,24. Kod studenata iz Istočne i Južne Srbije ove vrednosti su bile nešto manje (KIP = 8,69), kao i kod grupacije fakulteta tehničkih nauka (KIP = 8,84), kod onih čija majka poseduje fakultetsku diplomu (KIP = 9,33), odnosno onih koji svoje OZ-e smatraju zadovoljavajućim (KIP = 8,94). Značajno niža vrednost KŽPsOZ-a uočena je kod studenata sa zadovoljavajućom procenom OZ-a (KIP = 9,48). Procena zdravlja potpornog aparata zuba nije pokazala značajne razlike u vrednostima analiziranih indeksa.

Zaključak Vrednost KIP-a u populaciji mladih u Beogradu bila je manja u periodu između 1987. i 2012. godine (sa 12,5 na 10,4). Samoprocena OZ-a značajno korelira sa vrednostima KIP-a i KŽPsOZ-om.

Ključne reči: status oralnog zdravlja; kvalitet života povezan sa oralnim zdravljem; studenti

UVOD

Oralno zdravlje predstavlja sastavni deo opšteg zdravlja neophodnog za celokupno fizičko i mentalno blagostanje pojedinca [1]. Studija globalnog tereta bolesti (GBD) iz 2015. godine utvrdila je da je čak 2,5 milijarde ljudi pogođeno nelečenim zubnim karijesom, a nedavni izveštaji sugerišu da ukupni troškovi zbog bolesti zuba za 2015. godinu iznose 544,41 milijarde dolara [2, 3]. Studija OECD-a iz 2017. godine je takođe pokazala da su troškovi stomatološkog lečenja u zemljama sa visokim prihodima iznosili 20% od ukupnih zdravstvenih troškova finansiranim od samih građana [4]. Na osnovu postojećih podataka, uočeno je da je većina epidemioloških studija fokusirana na prikupljanje informacija o oralnom zdravstvenom stanju dece i adolescenata. Ovi podaci su ujedno i osnova za preporuke preventivne politike za smanjenje socijalno-ekonomskog tereta dentalnih oboljenja u bliskoj budućnosti, a posebno sa stanovišta javnozdravstvenih izdataka. Međutim, neke starosne grupe, poput mladih od 19 do 26 godina, u tom procesu ostale su manje ili više zapostavljene. Svakako, ovo je jedan od najvažnijih prelaznih perioda u čovekovom životu, posebno izražen kod studenata univerziteta suočenih sa dinamičnim fizičkim i socijalnim promenama [5]. Nova okruženja, često daleko od kuće, imaju za posledicu novi način života i mogu imati velikog uticaja na oralno i celokupno zdravlje [6]. U stručnoj literaturi samo je nekoliko epidemioloških studija u ovoj oblasti koje prikazuju podatke o zubnom statusu navedene populacije i kvalitetu života povezanih sa njihovim oralnim zdravljem (skr. KŽPsOZ). U Republici Srbiji poslednji put je oralno zdravstveno stanje navedene starosne grupe procenivano 1987. godine, u okviru opsežnije studije oralnog zdravlja stanovništva u Beogradu, a analiza je obuhvatila ukupno 4943 ispitanika navedene starosne dobi [7].

U periodu od poslednje studije dva aspekta su od potencijalno velikog značaja. Stručnoj javnosti nisu dostupni podaci o uticaju

ekonomskog kolapsa i ratova 90-ih u bivšoj Jugoslaviji na oralno zdravlje obuhvaćene ciljne grupe. Tokom tranzicionih godina u Srbiji početkom 21. veka, uredbama Zakona o zdravstvenoj zaštiti iz 2004. godine, studentima uzrasta od 19 do 26 godina nije priznato pravo na stomatološku zdravstvenu zaštitu kao deo obaveznog zdravstvenog plana finansiranog iz državnog budžeta. Sledećih sedam godina oko 250000 studenta troškove stomatoloških usluga finansiralo je sopstvenim prihodima.

Cilj ovog istraživanja bio je da se utvrdi status oralnog zdravlja studenata Beogradskog univerziteta od 19 do 26 godina u Republici Srbiji za 2012. godinu i analizira sveobuhvatan pregled kvaliteta života povezanog sa oralnim zdravljem.

MATERIJAL I METODE

Studija je uključila anketu o oralnom zdravlju, procenu statusa zuba i stanje potpornog aparata zuba.

Učesnici u ovoj studiji bili su studenti na fakultetima Univerziteta u Beogradu između oktobra 2011. i januara 2012. godine. Ukupno 699 studenata osnovnih studija uzrasta od 19 do 26 godina dalo je usmenu i pismenu saglasnost i pristalo na stomatološki pregled na Klinici za bolesti zuba Stomatološkog fakulteta Univerziteta u Beogradu. Populacija ispitanika obuhvatila je studente iz oblasti medicinskih (n = 173), društvenih (n = 290), prirodnih (n = 16) i tehničkih (n = 116) nauka, kao i drugih javnih i privatnih visokoškolskih ustanova smeštenih u Beogradu, Srbija (n = 104). Svi studenti Stomatološkog fakulteta Univerziteta u Beogradu bili su isključeni iz studije kako bi se izbegla pristrasnost u izboru [8].

Od ukupnog broja studenta koji su učestvovali, 530 je pristalo na anketu o oralnom zdravlju. Upitnik korišćen u ovoj studiji sastojao se od šest odeljaka i predstavljao je izmenjenu verziju „Standardnog upitnika za oralno zdravlje odraslih“ evropskog

projekta razvoja globalnih indikatora oralnog zdravlja – EGOHID II [9]. Anкета je sprovedena na Klinici za Bolesti zuba Stomatološkog fakulteta Univerziteta u Beogradu pre sprovođenja stomatološkog pregleda. U Odeljku 1 upitnika prikupljene su osnovne informacije o učesnicima studije – starost, pol, mesto rođenja i pohađani fakulteti (medicinske nauke / društvene nauke / prirodne nauke / tehničke nauke / ostalo [druge visokoškolske ustanove u Beogradu]). Odeljak 2 se fokusirao na sociodemografske karakteristike prilagođene studentskoj populaciji – godine studija; nivo obrazovanja roditelja (bez fakultetske diplome – visoka i viša škola / sa fakultetskom diplomom); radni status roditelja (zaposleni / nezaposleni / neaktivni); sredstva za finansiranje studija (roditelji / stipendije / studentski kredit / samofinansiranje / drugo). U Odeljku 3 fokus je postavljen na procenu korišćenja stomatološke zdravstvene zaštite kao i oralnohigijenskih navika studenata – poslednja poseta stomatologu (u poslednjih 12 meseci / pre više od 12 meseci / nisam siguran); razlozi poslednje posete (kontrola / rutinsko lečenje / hitno lečenje / protetski / ortodontski razlozi); pružalac stomatološke zaštite (privatni stomatolog / državna služba / nisam siguran); učestalost pranja zuba (jednom dnevno ili manje / najmanje dva puta dnevno); učestalost zamene četkica za zube (mesečno / tromesečno / dvogodišnje / godišnje); upotreba paste za zube na bazi fluorida (da / ne / nije siguran/a); upotreba interdentalne četkice ili konca (da / ne). Odeljak 4 je uključivao podatke o prisustvu loših navika a u vezi sa potvrđenim faktorima rizika – broj obroka (hrana i piće) dnevno (do tri puta dnevno / više od tri puta dnevno); konzumacija zaslađenih pića (da, svakodnevno ili povremeno / nikad / nisam siguran/a); pušenje cigareta i konzumacija alkohola (da, redovno ili povremeno / nikada). Odeljak 5 pružio je podatke o samoprocenivanju oralnog zdravlja (zadovoljavajuće / nezadovoljavajuće). U Odeljku 6 su bili podaci o prisustvu straha od odlaska stomatologu i KŽPsOZ-a, korišćenjem modifikovanog OHIP-14 instrumenta koji je obuhvatio osam aspekata – poteškoće sa hranom i pićem zbog problema sa zubima; zubobolja i bolne desni; iskustvo neprijatnog zadaha; osećaj sramote zbog izgleda zuba; izbegavanje smejanja / smeha zbog izgleda zuba; izbegavanje razgovora sa drugim osobama zbog izgleda zuba; poteškoće sa učenjem i drugim svakodnevnim aktivnostima zbog problema sa zubima; izbegavanje bilo kog oblika društvene aktivnosti zbog problema sa zubima. Učestalost svake stavke izmerena je pomoću bodovanja u okviru Likertove skale („nikada“ = 1, „ponekad“ = 2, „često“ = 3 i „svakodnevno“ = 4). Studenti koji su koristili mogućnost odgovora nisam siguran(a) / ne znam bili su isključeni iz daljih analiza. Na osnovu odgovora u okviru procene KŽPsOZ-a studenti su podeljeni u dve grupe – prvu sa niskim KŽPsOZ-om (najmanje jedan odgovor na bilo koju od osam stavki bio je „ponekad“, „često“ ili „svakodnevno“) i drugu bez niskog KŽPsOZ-a [10].

Maksimalni mogući rezultat KŽPsOZ-a u ovoj studiji bio je 32 za korelaciju sa KIP indeksom i 28 za gingivalni i indeks plaka. Analiza pouzdanosti zasnovana na Kronbahovoj alfi pokrenuta je da bi se utvrdila validnost i unutrašnja konzistentnost navedene KŽPsOZ ankete [11]. U dva slučaja (KIP / GI, PI), Kronbahova alfa za standardizovane stavke iznosila je 0,78, odnosno 0,73. Prosečna korelacija među stavkama iznosila je 0,31 (KIP) i 0,28 (GI, PI; stavka „neprijatan zadah“ je isključena iz analize nakon neophodne korekcije). Negativnih korelacija nije bilo i obezbeđena je minimalno prihvatljiva vrednost korelacije ponuđenih stavki od 0,2 [10, 12].

Kliničku procenu zubnog statusa sprovedli su studenti četvrte i pete godine stomatologije uz verifikaciju iskusnijeg kliničkog lekara na Klinici za bolesti zuba Stomatološkog fakulteta Univerziteta u Beogradu. Pregledano je 699 ispitanika. Procena je sledila standardne smernice Svetske zdravstvene organizacije (SZO) i smernice za kliničko ispitivanje oralnog zdravlja projekta EGOHID II [13, 14]. KIP indeks (prosečna vrednost karijesnih, plombiranih i ekstahovanih zuba kod pregledanih osoba) korišćen je za merenje iskustva zubnog karijesa populacije, a „Klasifikacija lezija izloženih površina zuba“ koju su predložili Mount i saradnici za identifikovanje površina zuba zahvaćenih karijesom (Površina 1 – jamice, fisure i okluzalne površine bočnih zuba; Površina 2 – aproksimalne površine zuba; Površina 3 – gingivalna trećina zuba) [15]. Sve procene su sprovedene vizuelnom inspekcijom i sondiranjem (korišćenjem ogledalca i standardnih stomatoloških sondi).

Procenu stanja potpornog aparata zuba sprovedli su studenti pete godine stomatologije uz verifikaciju kliničkog parodontologa na Klinici za parodontologiju i oralnu medicinu Stomatološkog fakulteta Univerziteta u Beogradu. Parodontološku procenu prošlo je 275 ispitanika. Ispitivanje je sledilo standardne smernice SZO i smernice za kliničko ispitivanje oralnog zdravlja projekta EGOHID II [13, 14]. Evaluacija je obuhvatala identifikaciju promena na mekim gingivalnim tkivima – gingivitis (da, vrsta gingivitisa – kataralni, akutni ulcero-nekrotični, hiperplastični, gingivalna fibromatoza, deskvamativni / ne) i prisustva oboljenja parodontocijuma (da, vrsta parodontopatije – hronična parodontopatija, akutna parodontopatija, akutni nekrotizirajući parodontitis, parodontopatija kao manifestacija sistemskih bolesti / ne). Tri indeksa korišćena su za određivanje stanja parodontalnog tkiva – gingivalni indeks po Lou i Silnesu – GI; nivo pripojnog epitela – NPE; parodontalni indeks – CPI, modifikovan za procenu dubine parodontalnog džepa ako je isti prisutan. Sva merenja sprovedena su na šest zuba (brojevi zuba – 16, 12, 24, 36, 32, 44), na četiri površine (mezijalna, distalna, jezična i vestibularna) i kalibrisanom parodontalnom sondom. Uz navedene indekse, primenjen je i plak indeks po Lou i Silnesu – PI, korišćen za registrovanje položaja i količine zubnih naslaga prisutnih u gingivalnom i subgingivalnom pojasu pregledanih zuba.

Indeksi KIP, GI, NPE, CPI i PI prikazani su u svojim srednjim vrednostima sa pripadajućom standardnom devijacijom. Mann-Whitney U test korišćen je za poređenje podataka između dve, a Kruskal-Vallis test za poređenje vrednosti navedenih indeksa za više od dve grupe učesnika i u skladu sa rezultatima sprovedene ankete. Vrednosti $p < 0,05$ smatrane su statistički značajnim. Hi-kvadrat i Fišerovi testovi primenjeni su za poređenje udela karijesnih, plombiranih, ekstahovanih i zdravih zuba kod dve ili više grupa studenata i u skladu sa rezultatima sprovedene ankete. Vrednosti $p < 0,05$ smatrane su statistički značajnim. Sve statističke analize izvršene su pomoću probne verzije 2021.1.1.1082 statističkog softvera XLSTAT (Addinsoft, Pariz, Francuska, EU).

REZULTATI

U Tabeli 1 prikazan je KIP indeks ukupnog broja studenata podvrgnutih pregledu ($n = 699$), koji je iznosio 10,24 (standardna devijacija [SD] 5,33; opseg = 0–31).

Kao što je prikazano u Tabeli 2, nije bilo značajnih razlika u vrednostima KIP-a između devojaka i mladića u pogledu

sociodemografskih aspekata, ali je bilo kod ostalih parametara. Najniža vrednost KIP-a zabeležena je kod studenata poreklom iz regiona Istočne i Južne Srbije. Vrednosti KIP-a nisu se značajno razlikovale između Beograda, Zapadne i Centralne Srbije i ostalih regiona i država. Ispitanici koji studiraju tehničke nauke imali su znatno niži KIP, a potom studenti medicinskih nauka. Najviše vrednosti KIP-a uočene su kod studenata prirodnih nauka i studenata drugih visokoškolskih ustanova. Nivo majčinog obrazovanja imao je značajnu ulogu u vrednosti KIP-a studenata, pri čemu su oni čija je majka imala fakultetsku diplomu imali značajno niže vrednosti.

Ni kod jednog parametra nisu uočene značajne razlike u vrednostima KIP-a, osim u slučaju vremena poslednje posete stomatologu. Studenti koji su stomatologa posetili u poslednjih godinu dana imali su viši KIP, i to u vrednosti od 10,61, u poređenju sa onima koji su posetu obavili pre više od godinu dana – 8,64. Rezultati prikazani u Tabeli 3 takođe pokazuju da nema statistički značajne razlike u vrednostima KIP-a u odnosu na stomatološku negu dobijenu kod privatnog ili državnog stomatologa.

Kada se posmatraju navike studenata prema faktorima rizika prikazanih u Tabeli 4, samo je konzumacija alkohola značajno uticala na vrednost KIP-a kod studenata. Studenti koji su svakodnevno/povremeno konzumirali alkohol imali su znatno niži KIP od onih koji su izjavili da nikada ne piju alkoholna pića (9,71 i 10,69).

Studenti koji su ocenili da je njihovo oralno zdravlje zadovoljavajuće imali su niži KIP, vrednosti 8,94, od onih koji su oralnim zdravljem nezadovoljni – KIP vrednosti 12,13. Isti trend primetan je i kada se uporede prosečne vrednosti KŽPsOZ-a – zadovoljni studenti sa ocenom 9,48 i nezadovoljni 11,11. Studenti bez niskog KŽPsOZ-a nisu pokazali prednosti u odnosu na one sa registrovanim niskim KŽPsOZ-om. Isti obrazac moguće je uočiti i kod studenata koji su potvrdili da imaju strah od odlaska stomatologu u poređenju sa onima koji takav problem nemaju (Tabela 5).

Tabela 6 prikazuje status (karijesni, plombirani, ekstrahovani, zdravi) zuba analiziranih u odnosu na region; fakultet i obrazovanje majke. Nešto manji broj zuba analiziran je u kontekstu pola, samoprocene oralnog zdravlja, poslednje posete stomatologu i straha od odlaska stomatologu (509×28). Značajne razlike su uočene u gotovo svakom poređenju procentualne zastupljenosti karijesnih, plombiranih, ekstrahovanih i zdravih zuba. Studenti ženskog i muškog pola imaju približno jednak udeo zdravih i ekstrahovanih zuba, dok se kod devojaka uočava značajno veći procenat plombiranih i značajno manji udeo karijesnih zuba. Studenti medicine imaju najniži procenat karijesnih zuba, dok bi se isto moglo reći i za studente poreklom iz Istočne i Južne Srbije. Najznačajnije razlike se vide u grupama studenata koji svoje oralno zdravlje doživljavaju kao zadovoljavajuće u odnosu na one koji ga doživljavaju kao nezadovoljavajuće. Takođe nisu uočene značajne razlike u udelu plombiranih zuba kod učesnika čija je majka fakultetski obrazovana i onih čija majka to nije.

Među zubima najčešće pogođenim karijesom preovlađuju prvi i drugi molari i u gornjoj i u donjoj vilici (Slika 1a). Najmanje zahvaćeni bili su zubi u interkaninoj regiji donje vilice (Slika 1b).

Sa druge strane, površine zuba pod zubnim karijesom ravnomernije su distribuirane po različitim tipovima zuba (Slika 2). Prevalencija lezija površine 1 najviša je kod molara, dok lezije površine 2 dominiraju kod premolara i u interkaninom regionu gornje vilice. Lezije na površini 3 uglavnom su zastupljene kod premolara u donjoj vilici.

Procena stanja potpornog aparata zuba kod 275 studenta rezultirala je identifikovanjem gingivitisa kod 99 (36%) studenata i nekog od oblika parodontopatije kod njih 20 (7,3%). Najčešći tip gingivitisa bio je kataralni (Slika 3a). Lokalizovana hronična parodontopatija bila je najzastupljenija u pogledu parodontalnih oboljenja (Slika 3b).

Srednje vrednosti svih analiziranih parodontalnih indeksa prikazanih u Tabeli 7 bile su ispod 1,0 ($n = 275$).

U ispitivanju ukupnog uticaja samoprocene oralnog zdravlja, straha od odlaska stomatologu i KŽPsOZ-a na zdravlje parodonticijuma, a naročito po pitanju prosečne vrednosti GI i PI indeksa, nisu uočene statistički značajne razlike (Tabela 8).

DISKUSIJA

Vrednost KIP-a studentske populacije u ovoj studiji je iznad 10,24. Niže vrednosti KIP-a su povezane sa rodnim mestom studenata (Istočna i Južna Srbija), sa fakultetima tehničkih nauka, odnosno studentima čije majke poseduju fakultetsku diplomu, studentima koji redovno konzumiraju alkohol i onima koji smatraju svoje oralno zdravlje zadovoljavajućim. Znatno viši KIP primećen je kod ispitanika koji su posetili stomatologa u poslednjih godinu dana, a priroda stomatološke službe (privatne ili javne) ne igra bitniju ulogu, kao ni pol i strah od odlaska stomatologu. Učestalost pranja zuba, interdentalno čišćenje, upotreba fluoridne paste za zube, konzumiranje zaslađenih pića, pušenje i KŽPsOZ takođe nemaju najvažnijeg uticaja na vrednosti KIP-a studentske populacije. Niže vrednosti prosečnog KŽPsOZ-a, koje podrazumevaju odsustvo tegoba i problema, potpuno odgovara pogledu studenata na svoje oralno zdravlje. S druge strane, zastupljenost karijesnih, plombiranih, ekstrahovanih i zdravih zuba donosi nešto drugačiju perspektivu oralnog zdravlja učesnika ovog istraživanja. Niža zastupljenost karijesnih zuba u velikoj meri povezana je sa studentima ženskog pola, studentima poreklom iz Istočne i Južne Srbije i studentima medicinskih nauka. Slično je i sa onima čije majke imaju viši stepen obrazovanja (fakultetsku diplomu), odnosno studentima koji su posetili stomatološku ordinaciju u proteklih 12 meseci i nemaju strah od odlaska stomatologu. Takođe je evidentno da studenti ženskog pola, zajedno sa onima koje redovno posećuju stomatologa i nemaju strah od odlaska stomatologu, poseduju značajno veći broj plombiranih zuba. Kada je reč o zubima i zubnim površinama koje su uglavnom zahvaćene karijesom, rezultati ove studije prate uobičajene trendove [16]. Najveća prevalencija karijesa primećuje se na okluzalnim površinama molara i aproksimalnim površinama sekutića, očnjaka i premolara, a naročito u gornjoj vilici. Gingivalna trećina očnjaka i premolara donje vilice takođe je bila značajnije zahvaćena karijesom. Samo nekolicini ispitanika je dijagnostikovano neki vid parodontopatije. Istovremeno, prosečne vrednosti GI, NPE, CPI i PI indeksa znatno ispod jedan ne ukazuju na ozbiljnija oboljenja parodonticijuma u ispitivanoj populaciji.

Prosečna vrednost KIP-a ukupnog broja učesnika ovog istraživanja veća je od vrednosti istog parametra u studijama sličnog sadržaja. Prosečni KIP od 10,24 najbliži je vrednostima studenata stomatologije i medicine u Rusiji – 7,46, a potom kod korejskih studenata – 6,1 [10, 17]. Kada se analizira samo KIP vrednost studenata medicine koji su učestvovali u ovoj studiji, razlike su manje izražene ($KIP = 9,67$). U poređenju sa populacijom

30-godišnjaka u Adeleju, Australija (KIP = 2,1), 18-godišnjaka u Hong Kongu, Kina (KIP = 1,4) i studenata prve godine studija u Okajami, Japan (KIP = 2,01), vrednosti su znatno više [18, 19, 20]. Vredno je napomenuti da broj plombiranih zuba u ovim studijama zauzima veći udeo KIP-a (80-90%), dok u našoj studiji to nije slučaj – oko 60% [10, 19]. Takav nalaz ukazuje na to da studenti osnovnih studija u Beogradu imaju veći broj aktivnih karijesnih lezija, kao i veći broj ekstrakcija od kolega sa određenih univerziteta u inostranstvu.

Uz sve navedeno, ruski studenti se značajno razlikuju po grupama sa niskim i bez niskog KŽPsOZ-a, što nije tipično za beogradske studente [10]. U tom smislu, studenti osnovnih studija u Beogradu sličniji su 19-godišnjim Šveđanima [21]. Prosečni GI indeks beogradskih studenata gotovo je dvostruko veći od vrednosti istog parametra za studente iz severozapadne Rusije (0,51 i 0,27) [10]. Međutim, obe vrednosti ne prelaze graničnu vrednost od jedan, što ukazuje na odsustvo inflamacije gingive.

U poređenju sa studijom procene oralnog zdravlja iz 1987. godine, KIP je opao sa 12,5 u 1987. na 10,2 u 2012. U pogledu procenta zuba pogođenih karijesom, broj je porastao sa 31% u 1987. na 38% u 2012. [7]. Ostaje nejasno da li su razlozi navedenog skoka ekonomske prirode, neefikasnosti preventivnih programa u dečjem dobu, regulatornih pitanja ili individualnih faktora. Takođe, rezultati ove studije pokazuju da što je veći nivo obrazovanja majki studenata, to isti poseduju veći broj zdravih zuba. Navedeni rezultat podudara se sa konstatacijama da visok nivo majčine edukacije i adekvatno oralno zdravlje majke pozitivno utiču na oralno zdravlje tokom detinjstva, a kasnije i tokom odrastanja [22]. Udeo plombiranih zuba takođe se uvećao sa 46,4% na 54,5%, dok je procenat ekstrahovanih zuba zabeležio značajan pad sa 22,4% na 7,4% [7]. To potencijalno ukazuje na prelazak sa hirurškog na konzervativniji pristup u stomatološkom lečenju pacijenata studentske populacije u periodu između dve studije.

Prema saznanjima autora ovog istraživanja, ovo je prva studija od 1987. godine u Beogradu i Srbiji koja daje sveobuhvatan i detaljan pregled stanja oralnog zdravlja studenata uzrasta od 19 do 26 godina. Za razliku od većine ostalih studija, ona isključuje studente stomatologije, čime doprinosi diversifikaciji nalaza i obuhvata brojne druge grupe studenata različitog geografskog porekla i sa različitih fakulteta. Takođe obezbeđuje zdravu osnovu za dalja ispitivanja uticaja KŽPsOZ-a na kliničke determinante oralnog zdravlja.

Odeljak 6 upitnika, a na temu KŽPsOZ-a, sadrži svega osam pitanja koja se odnose na originalni OHIP-14 obrazac. Iako se

unutrašnja konzistentnost primenjene ankete na temu KŽPsOZ može smatrati prihvatljivom (Kronbahova alfa > 0,7 [0,778; 0,703]), ona je i dalje značajno ispod nivoa vrednosti iznad 0,85 dostignutog u studijama koje primenjuju originalni koncept OHIP-14 obrasca [8, 16]. Drugi evidentan nedostatak ove studije jeste i činjenica da su procenu stomatološkog statusa i stanja parodonticijuma sprovodili studenti stomatologije. I pored neposrednog nadzora kliničkih lekara, ostaje nejasno da li je kvalitet obavljenog pregleda u svim slučajevima bio na zadovoljavajućem nivou.

ZAKLJUČAK

Nalazi ove studije ukazuju na smanjenje KIP-a kod mladih starosti od 19 do 26 godina tokom poslednjih 30 godina i porast procenta karijesom zahvaćenih zuba na nivou populacije.

Na osnovu komparativnih analiza uočava se da populaciona grupa studenata u Beogradu sveukupno ima lošije oralno zdravlje od svojih kolega iz Rusije, Kine, Japana ili Švedske.

Samoprocena studenata o kvalitetu svog oralnog zdravlja ima značajan uticaj na neke od kliničkih determinanti analiziranih u okviru ovog istraživanja.

Dalja ispitivanja neophodna su u kontekstu određenih socio-ekonomskih i lokalno-regionalnih specifičnosti koje mogu objasniti razlike u oralnom zdravlju između studenata poreklom iz različitih regiona. Buduća istraživanja takođe je neophodno usredsrediti na prospektivna ispitivanja promena koje se potencijalno dešavaju u funkciji vremena kod istih ispitanika. Iz tih razloga akcenat je potrebno staviti na aktivnije uključivanje privatnih i državnih stomatologa i na obezbeđivanje podrške regulatornih tela radi pouzdanijeg i uspešnijeg pristupa zajednice u pogledu oralnog zdravlja.

Zahvalnica: Ova studija izvedena je u okviru projekta „Zagrizi Znanje Zdravim Zubima“ finansiranog sredstvima Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije (Projekat br. 451-02-266 / 2011-05). Želimo da se zahvalimo osoblju Klinike za bolesti zuba i Klinike za parodontologiju i oralnu medicinu Stomatološkog fakulteta Univerziteta u Beogradu na njihovom predanom radu i doprinosu ovoj studiji. Takođe bismo želeli da se zahvalimo gđi Sonji Nektarijević na vremenu i radu koje je posvetila pripremi aplikacione dokumentacije i celokupnom dizajnu projekta.