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## Čimbenici koji utječu na kvalitetu života povezanu s oralnim zdravljem među pacijentima starije životne dobi u Hrvatskoj

### Factors Affecting Oral Health–Related Quality of Life Among Elderly Croatian Patients

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#### Sažetak

**Svrha:** Na kvalitetu života povezanu s oralnim zdravljem (OHRQoL) i njezinu više-dimenzijsku vrijednost utječe mnogo čimbenika. Stoga se istraživanjem željelo ustanoviti koji demografski i subjektivni čimbenici znatno utječu na OHRQoL među pacijentima starije životne dobi s potpunim pomičnim protezama (CRDP). **Materijali i metode:** U istraživanju, provedenom ispunjavanjem upitnika, sudjelovao je 301 ispitanik. Svi su bili štićenici domova za starije osobe u Zagrebu i Slavonskom Brodu u Hrvatskoj te su nosili gornji i/ili donji CRDP. Upitnik se sastojao od dva dijela: u prvom su opća pitanja o ispitanicima, a u drugom hrvatska verzija Oral Health Impact Profila (OHIP - 49), upitnika s 49 pitanja podijeljenih u sedam domena. **Rezultati:** Prosječna dob ispitanika bila je  $74 \pm 12,1$  godinu u rasponu od 60 do 99 godina. Zbroj bodova dobiven OHIP-om bio je 26,5. Najviše prosječne vrijednosti pronađene su u domeni funkcijskog ograničenja – 6,7, fizičke boli – 5,1, i fizičke nesposobnosti – 5,9. Dob ispitanika, obrazovanje, zanimanje, veličina mjesta stanovanja, vrsta CRDP-a i koliko dugo ispitanik nosi protezu, statistički su značajno utjecali na oralno zdravlje – OHRQoL ( $p < 0,05$ ). **Zaključak:** Opći i sociodemografski čimbenici značajno utječu na subjektivni doživljaj oralnoga zdravlja. Mlađi ispitanici, ispitanici iz ruralnih mjesta, oni nižeg stupnja obrazovanja i ispitanici koji kraće nose proteze pokazuju veći utjecaj na OHRQoL.

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#### Ključne riječi

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#### Uvod

Zahvaljujući razvoju medicine produžen je životni vijek ljudi, pa je veći broj stomatoloških pacijenata u starijoj životnoj dobi. Unatoč naporima stomatologa u educiranju pacijenata o pravilnoj higijeni usne šupljine (radi prevencije oralnih bolesti) te liječenju zubnog karijesa i parodontnih bolesti, gubitak zuba velik je problem među mladim i starijim pacijentima (1 – 3). Djelomična ili potpuna bezubost vrlo je neugodna jer utječe na aktivnosti poput govora i hranjenja (odabir hrane i užitek pri jelu), ali i na izgled pojedinca (4). Gubitak zuba psihički utječe na ljude te je usko povezan s kvalitetom života ovisnom o fizičkom i mentalnom stanju pojedinca (5). Potpuna bezubost mogla bi se doživjeti i kao gubitak vitalnosti te znak starenja (4, 5). U osnovi, oralne bolesti poput gubitka zuba, mogu utjecati na međuljudske odnose i dnevne aktivnosti, ali i kvalitetu života (6). Stoga je cilj suvremene stomatologije unaprijediti oralno zdravlje, a time i cjelokupnu kvalitetu života pacijenata.

#### Introduction

With rapid development of medicine, the number of elderly people, and consequently, elderly patients in dental practice, is constantly increasing. Despite the efforts of dentists to educate patients on oral hygiene (to prevent oral health diseases), and to treat diseases such as dental caries and periodontitis, tooth loss is still a significant problem, both in younger and older people (1-3). Basically, edentulism (partial or total) is very unpleasant because it affects normal functional activities such as speech, ability to eat (selection and enjoyment of food), and esthetic appearance (4). Also, tooth loss psychologically affects people and is closely related to the physical- and mental-related quality of life (5). Loss of all teeth can be experienced as losing vitality and getting older (4, 5). In essence, oral disorders such as tooth loss can affect interpersonal relationships and daily activities and therefore the "well-being" or "quality of life" (6). Therefore, the goal of contemporary

Zdravlje je stanje potpunoga tjelesnog, duševnog i socijalnog blagostanja, a ne samo odsutnost bolesti i iznemoglosti (7). Prema toj definiciji, cilj stomatološke brige za pacijenta nije samo odsutnost zubnog karijesa, parodontnih i/ili ostalih oralnih bolesti, nego i njegovo duševno i socijalno blagostanje. Oralno zdravlje važan je dio općeg zdravlja jer oralne bolesti mogu utjecati na dnevne aktivnosti, a time i na kvalitetu života (6, 8). Oral Health Impact Profile (OHIP) razvijen u Australiji na engleskom jeziku, najčešće je korišten upitnik za istraživanje i procjenu kvalitete života povezane s oralnim zdravljem (OHRQoL) (9, 10). Kao jedno od najiscrpnijih mjerila subjektivne procjene oralnoga zdravlja, OHIP je osmišljen kako bi se mjerila subjektivno opisana disfunkcija, nelagoda i nesposobnost povezana s oralnim zdravljem (11, 12). Izvorna verzija upitnika sastoji se od 49 pitanja podijeljenih u sedam domena, iako postoje kraće i dulje verzije (9, 10, 12). U dulje verzije uključena su pitanja vezana za određenu kulturu ili neku bolest (12). Upitnik ispunjavaju i pacijenti s fiksnim ili mobilnim protetskim radovima (13, 14) kako bi se, pak, procijenio utjecaj protetske terapije na njihovo oralno zdravlje i kvalitetu života.

Bezuba gornja i/ili donja čeljust uobičajeno se protetski zbrinjava potpunim pomičnim protezama (CRDP), a uspjeh takve terapije stomatolozi i pacijenti često različito procjenjuju (15). Pri procjeni kvalitete pacijentu je najvažnije osobno zadovoljstvo, no ne i tehnička kvaliteta rada. To je zadovoljstvo individualno i višezručno, temeljeno na prijašnjem iskustvu i očekivanjima, zdravstvenom stanju usne šupljine te emocionalnom i općem zdravstvenom stanju (15). Potvrđena je povezanost oralnoga zdravlja i kvalitete života pacijenata (14, 16 – 19) te poboljšanje oralnoga zdravlja i kvalitete života pacijenata (subjektivna procjena) nakon izrade novih protetskih radova ili korekcije (podlaganje proteza) postojećih (16 – 19). Na zadovoljstvo pacijenata protezama i oralnim zdravljem (OHRQoL) mogu utjecati loša retencija i nestabilni CRDP-i zbog resorpcije alveolarnog grebena, što je osobito izraženo na donjoj čeljusti. U rezultatima Furuyame i suradnika (17) uočen je manji utjecaj fiksnoga protetskog rada na dentalnim implantatima na OHRQoL, za razliku od utjecaja kod pacijenata s klasičnim pomičnim protezama. Retencija CRDP-a na dentalnim implantatima u Hrvatskoj nije uobičajena metoda protetskog zbrinjavanja potpuno bezubih pacijenata jer Hrvatski zavod za zdravstveno osiguranje plaća troškove samo klasičnih proteza.

S obzirom na spomenuti utjecaj bezubosti i protetske terapije na OHRQoL, svrha istraživanja bila je utvrditi oralno zdravlje (primjenom hrvatske verzije upitnika OHIP - 49) na skupini ljudi starije životne dobi (štićenika domova za starije osobe) koji nose CRDP. Budući da više čimbenika utječe na OHRQoL, poput dobi pacijenata, gubitka zuba, postojećih oralnih bolesti, sociodemografskih, socijalnih, kulturnih, psihičkih i financijskih čimbenika te obrazovanja (18), istraživanjem se želio ispitati i utjecaj dobi, spola, stupnja obrazovanja i zanimanja pacijenata, zatim veličine mjesta stanovanja, navike nošenja proteza danju i noću ili samo danju, vrste CRDP-a, koliko dugo nose CRDP (razdoblje bezubosti) i starosti CRDP-a na oralno zdravlje.

dentistry is to improve oral health, thus improving overall quality of patients' life.

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity (7). From this point of view, the ultimate goal in dentistry is not only the absence of dental caries, periodontitis, and/or other oral diseases, but also the mental and social well-being of patients. Oral health has always been considered an important part of patient's general health due to the fact that oral diseases can interfere with the daily life activities, thus affecting general quality of life (6,8). Oral Health Impact Profile (OHIP), originally developed in Australia in the English language, is the most commonly used questionnaire to study and evaluate the oral health related quality of life (OHRQoL) (9,10). As one of the most comprehensive subjective oral health status measures, the OHIP is designed to measure self-reported dysfunction, discomfort, and disability attributed to oral conditions (11,12). The original OHIP instrument consists of 49 items representing seven domains, but shorter and larger versions have also been developed (9,10,12). Longer versions were developed by adding some culture-specific items or specific disease protocols (12). It is also used among patients wearing fixed and removable dental prostheses (13,14) to evaluate the impact of prosthetic therapy on oral health and general quality of life.

Edentulous maxillary and/or mandibular jaw are conventionally treated with complete removable dental prostheses (CRDP) and the success of such prosthetic therapy is differently evaluated by dentists and their patients (15). Personal satisfaction is often the most important factor in patient's evaluation of dentures, not their technical quality (excellence). Patient's satisfaction is individual and multicausal, depending on their prior experience, expectations, health, and condition of the oral cavity as well as on emotional and general health status (15). Many published papers confirmed the connection of oral health and general quality of life (14,16-19). Many authors reported improvement of patients' oral health and overall quality of life (patient's subjective assessment) after prosthetic treatment was performed, or after correction (denture relining) of existing prosthetic modality (16-19). Poor retention and stability of CRDP due to the residual ridge resorption, especially in the mandible, can affect patient's satisfaction and OHRQoL. According to results reported by Furuyama et al., (17) in patients with implant-supported fixed dentures, the OHRQoL was generally less impaired than it was in patients with partial removable dental prosthesis. Unfortunately, the use of dental implants for retaining CRDP is not a common method for edentulous patients in Croatia because the Croatian Institute for Health Insurance covers the costs of conventional CRDP, but not those of implant-supported CRDP.

Due to the aforementioned influence of edentulism and prosthetic treatment on OHRQoL, the aim of this study was to determine the OHRQoL (using Croatian version of OHIP-49 questionnaire) in a group of elderly people (residents from elderly care homes) wearing CRDP. Since many factors influence OHRQoL, such as the patient's age, tooth loss, existing pathologies, sociodemographic, cultural, educa-

## Materijali i metode

U ovom presječnom istraživanju sudjelovao je ukupno 301 ispitanik. Svi su nosili gornji i/ili donji CRDP. Ispitanici su bili štićenici domova za starije osobe s područja Zagreba i Slavinskoga Broda, dobrog mentalnog i kognitivnog zdravlja te su mogli samostalno ispuniti upitnik. Informirani su o ciljevima istraživanja te su potpisali suglasnost o sudjelovanju. Istraživanje je odobrio Etički odbor Stomatološkog fakulteta Sveučilišta u Zagrebu.

Upitnik korišten u istraživanju sastojao se od dva dijela. U prvom su bila pitanja o dobi, spolu, veličini mjesta stanovanja (broj stanovnika mjesta iz kojeg su ispitanici došli u Zagreb ili Slavinski Brod – do deset tisuća stanovnika, deset do pedeset tisuća, pedeset do sto tisuća stanovnika, sto do tristo tisuća stanovnika i više od tristo tisuća stanovnika), stupnju obrazovanja (bez završene osnovne škole – NS, završena osnovna škola – ES, ispitanici sa srednjom stručnom spremom – HS, ispitanici s visokom stručnom spremom – CO), zanimanju, nošenju proteza *danju i noću* ili samo danju i koliko dugo nose proteze (razdoblje bezubosti izraženo u godinama).

Drugi dio bio je hrvatska verzija upitnika OHIP - 49 (12). Upitnik se sastoji od 49 pitanja podijeljenih u sedam domena: funkcijsko ograničenje (9 pitanja), fizička bol (9 pitanja), psihička nelagoda (5 pitanja), fizička nesposobnost (9 pitanja), psihička nesposobnost (6 pitanja), socijalna nesposobnost (5 pitanja) i hendikep (6 pitanja) (12). Svaki ispitanik ispunio je hrvatsku verziju upitnika OHIP - 49 uz pomoć jednog od autora – ispitivača, pa je ispunjenost bila 100-postotna. Na pitanja su odgovarali na temelju Likertove ljestvice te procjenjivali koliko su često osjetili pojedini problem u proteklih mjesec dana (0 = nikada, 1 = gotovo nikada, 2 = povremeno, 3 = često, 4 = vrlo često). Nula je označavala da nema nikakvog problema, a viši rezultat upućivao je na lošije oralno zdravlje (12).

Prikupljeni podatci obrađeni su statističkim programom SPSS 15.0 (SPSS Inc., Chicago, Illinois, SAD) metodom deskriptivne statistike, Studentovim t-testom za nezavisne uzorke,  $\chi^2$  testom, jednosmjernom analizom varijance ANOVA i Scheffevim *post hoc* testom na razini značajnosti od 0,05.

tional, psychological, dietary, and financial factors (18), another aim of this study was to assess the influence of factors such as patient's age, gender, level of education and profession, residence place size, the "day-night" or just "daily" habit of CRDP wearing, type of CRDP, total time of denture wearing period (period of edentulism), and the age of CRDP on OHRQoL.

## Materials and Methods

This cross-sectional study included 301 participants wearing mandibular and/or maxillary CRDP. The participants included in this study were residents of elderly care homes in the area of Zagreb and Slavinski Brod in Croatia. The selection criterion for inclusion of participants in the study was good mental and cognitive health in order for them to be capable to understand and fill out the questionnaire. They were all informed about the objectives and aims of this study after which a written consent was obtained for their participation. The present study was approved by the Ethics Committee of the School of Dental Medicine, University of Zagreb, Croatia.

The questionnaire used in this study consisted of two sections. The first section consisted of questions about age, gender, number of inhabitants – population of residents' original place/hometown from where participants came to Zagreb or Slavinski Brod (up to 10,000 residents, 10,000–50,000 residents, 50,000–100,000 residents, 100,000–300,000 residents, and more than 300,000 residents), participants' level of education (no school completed—NS, completed elementary school—ES, completed high school—HS, and college/university degree—CO), participant's profession, "day-night" or just "day" time denture wearing, and the time of denture wearing period (period of edentulism expressed in years).

The second section of the questionnaire used in this study was the Croatian version of OHIP-49 questionnaire (12). This questionnaire consists of 49 items representing seven domains: functional limitation (9 items), physical pain (9 items), psychological discomfort (5 items), physical disability (9 items), psychological disability (6 items), social disability (5 items), and handicap (6 items) (12). All the participants filled out the Croatian version of the OHIP-49 questionnaire with the help of one of the authors—the examiner; therefore, the response rate was 100%, with all the questions answered. For each question, the participants were asked how frequently they have experienced the investigated variable during the past month. Responses were rated using a Likert-type scale (0=never, 1=hardly ever, 2=occasionally, 3=fairly often, 4=very often). Zero indicated the absence of any problems. The higher scores indicated more impaired oral health (12).

The results obtained were statistically analyzed using computer software SPSS 15.0 (SPSS Inc., Chicago, Illinois, United States) by the method of descriptive statistics, and the differences tested for significance by the independent sample Student's t-test,  $\chi^2$  test, one-way ANOVA, and Scheffe post hoc test, with a significance level of 0.05.

## Rezultati

Prosječna dob ispitanika bila je  $74 \pm 12,1$  godinu (od 60 do 99 godina). U istraživanju su sudjelovale 202 žene (67 %) i 99 muškaraca (33 %). Raspodjela ispitanika s obzirom na dob, veličinu mjesta stanovanja, stupanj obrazovanja, vrstu zanimanja, vrstu CRDP-a i razdoblje nošenja proteza (starih i postojećih) prikazana je u tablici 1.

Srednje vrijednosti rezultata po domenama iz upitnika OHIP - 49 bile su: funkcijsko ograničenje – 6,7; fizička bol – 5,1; psihička nelagoda – 2,0; fizička nesposobnost – 5,9; psihička nesposobnost – 2,4; socijalna nesposobnost – 1,2; hendikep – 2,8; i OHIP-zbroj bodova – 26,5.

S obzirom na dobne skupine, *post hoc* test (Scheffe) upućuje na statistički značajno veću ( $p < 0,05$ ) psihičku nelagodu među pacijentima mlađima od 65 godina ( $X=3,22$ ) u odnosu na ispitanike u dobnoj skupini između 66 i 75 go-

## Results

The participants were of an average age of  $74 \pm 12.1$  years (from 60 to 99 years). The study group consisted of 202 female (67%) and 99 male (33%) participants. Distribution of the participants according to the age, residence place size, level of education, profession, type of CRDP, and wearing period of removable dental prosthesis (current and previous) is shown in Table 1.

Mean values obtained for each domain of OHIP-49 questionnaire were as follows: functional limitation 6.7; physical pain 5.1; psychological discomfort 2.0; physical disability 5.9; psychological disability 2.4; social disability 1.2; handicap 2.8; and OHIP summary score was 26.5.

According to the age groups, Scheffe *post hoc* test revealed statistically significant ( $p < 0.05$ ) higher psychological discomfort among participants younger than 65 years ( $X=3.22$ ) com-

**Tablica 1.** Raspodjela ispitanika s obzirom na dob, veličinu mjesta stanovanja, stupanj obrazovanja, zanimanje, vrstu potpunih pomičnih proteza (CRDP) i duljinu nošenja CRDP-a  
**Table 1** Distribution of the participants according to the age, residence place size, level of education, professional group, type of complete removable dental prosthesis (CRDP), and wearing period of CRDP

N=301	Dob • Age		
< 65 godina • years		67	22.3%
66 - 75 godina • years		88	29.2%
76 - 85 godina • years		84	27.9%
> 85 godina • years		62	20.6%
<b>Veličina mjesta stanovanja • Residence place size</b>			
< 10 000 residents		64	21.3%
10 000 – 50 000 stanovnika • residents		32	10.6%
50 000 – 100 000 stanovnika • residents		100	33.2%
100 000 – 300 000 stanovnika • residents		12	4%
> 300 000 stanovnika • residents		93	30.9%
<b>Obrazovanje • Education</b>			
Nezavršena osnovna škola • No school completed		28	9.3%
Osnovna škola • Elementary school		78	25.9%
Srednja stručna sprema • High school		139	46.2%
Visoka stručna sprema • College/university		56	18.6%
<b>Zanimanje • Professional group</b>			
Uslužne djelatnosti • Service and industry		109	36.2%
Pravo i ekonomija • Law and economics		55	18.3%
Obrt i pojedinačna zanimanja • Craftsmen		42	14%
Obrazovanje • Education		26	8.6%
Tehnička zanimanja • Technicians		19	6.3%
Zdravstvo i socijalna skrb • Health and social care		14	4.7%
Poljoprivreda • Agriculture		14	4.7%
Ostali (izvan navedenih grupacija) • Other (outside of mentioned groups)		22	7.3%
<b>Potpune pomične proteze (CRDP) • Complete removable dental prosthesis (CRDP)</b>			
Samo gornji CRDP • Only maxillary CRDP		87	28.9%
Samo donji CRDP • Only mandibular CRDP		17	5.6%
Oba CRDP-a • Both CRDP		197	65.4%
<b>Razdoblje nošenja CRDP-a • Wearing period of CRDP</b>			
< 5 godina • years		35	11.6%
5 – 10 godina • years		42	14%
10 – 20 godina • years		73	24.3%
20 – 30 godina • years		73	24.3%
> 30 godina • years		50	16.6%

**Tablica 2.** Prikaz statistički značajnih razlika prema skupinama i zbroj bodova prema OHIP-u s obzirom na veličinu dosadašnjeg mjesta stanovanja izraženu brojem stanovnika  
**Table 2** Statistically significant results according to the residence place size (number of residents) for seven OHIP dimensions and OHIP summary score

OHIP 49	Broj stanovnika • Number of residents		Srednje vrijednosti razlika • Mean value difference	SE	p
Funkcijsko ograničenje • Functional limitations	Manje od • Less than 10 000	50 000–100 000	3.59	0.98	0.01*
Fizička bol • Physical pain	Manje od • Less than 10 000	50 000–100 000	3.95	0.77	0.00*
		>300 000	2.91	0.78	0.00*
Psihička nelagoda • Psychological discomfort	Manje od • Less than 10 000	50 000–100 000	2.94	0.58	0.00*
		>300 000	2.92	0.58	0.00*
Fizička nesposobnost • Physical disability	Manje od • Less than 10 000	50 000–100 000	5.41	1.08	0.00*
		>300 000	4.12	1.09	0.00*
Psihička nesposobnost • Psychological disability	Manje od • Less than 10 000	50 000–100 000	4.14	0.71	0.00*
		100 000–300 000	4.59	1.40	0.03*
		>300 000	4.11	0.72	0.00*
Socijalna nesposobnost • Social disability	Manje od • Less than 10 000	50 000–100 000	2.93	0.56	0.00*
		>300 000	3.11	0.57	0.00*
Hendikep • Handicap	Manje od • Less than 10 000	50 000–100 000	4.20	0.61	0.00*
		>300 000	2.96	0.62	0.00*

p - p vrijednost • p value, SE - standardna pogreška • standard error, \*p < 0.05

**Tablica 3.** Prikaz statistički značajnih razlika srednjih vrijednosti bodova prema OHIP-u s obzirom na zanimanje ispitanika  
**Table 3** Statistically significant differences in OHIP mean scores according to the participant's profession

OHIP 49	Zanimanje • Profession		Srednja vrijednost razlika • Mean value differences	SE	p
Psihička nesposobnost • Psychological disability	Ostali • Other	Obrazovanje • Education	5.20	1.33	0.03*
Socijalna nesposobnost • Social disability	Poljoprivreda • Agriculture	Uslužne djelatnosti • Service and industry	4.95	0.98	0.00*
		Zdravstvo i socijalna skrb • Health and social care	5.64	1.31	0.01*
		Obrazovanje • Education	5.63	1.15	0.00*
		Pravo i ekonomija • Law and economics	5.20	1.04	0.00*
	Ostali • Other	Uslužne djelatnosti • Service and industry	3.23	0.81	0.03*
		Pravo i ekonomija • Law and economics	3.49	0.87	0.03*
Obrazovanje • Education		3.92	1.00	0.03*	
Hendikep • Handicap	Ostali • Other	Uslužne djelatnosti • Service and industry	4.56	0.92	0.00*
		Pravo i ekonomija • Law and economics	4.43	0.99	0.00*
		Obrazovanje • Education	4.84	1.14	0.01*
Zbroj bodova • Summary score	Poljoprivreda • Agriculture	Obrazovanje • Education	36.42	9.51	0.04*
	Ostali • Other	Uslužne djelatnosti • Service and industry	25.71	6.71	0.04*
		Obrazovanje • Education	34.05	8.31	0.02*

p - p vrijednost • p value, SE - standardna pogreška • standard error, \*p < 0.05

dina ( $X=1,50$ ), te statistički značajno veću psihičku nesposobnost ( $p<0,05$ ) među ispitanicima mlađima od 65 godina ( $X=3,94$ ) u odnosu prema ispitanicima starijima od 86 godina ( $X=1,32$ ).

pared to participants aged from 66 to 75 years ( $X=1,50$ ), as well as statistically significant ( $p<0,05$ ) higher psychological disability in a group of participants younger than 65 years ( $X=3,94$ ) compared to participants older than 86 years ( $X=1,32$ ).

S obzirom na spol ispitanika, starost CRDP-a i naviku nošenja proteza (danju i noću ili samo danju) nema statistički značajnih razlika u rezultatima ( $p > 0,05$ ).

S obzirom na veličinu mjesta stanovanja, statistički značajno veće vrijednosti dobivene su za sve domene u upitniku i zbroj bodova među ispitanicima iz mjesta stanovanja s manje od deset tisuća stanovnika u usporedbi s ispitanicima iz većih mjesta (tablica 2.).

S obzirom na stupanj obrazovanja, Scheffeov *post hoc* test upozorava na statistički značajnu razliku ( $p < 0,05$ ) srednjih vrijednosti prema OHIP-u za domenu psihičke nesposobnosti između NS-ispitanika ( $X=5,32$ ), CO-ispitanika ( $X=1,51$ ) i ES-ispitanika ( $X=1,70$ ). Uzimajući u obzir zanimanje ispitanika, kod poljoprivrednika i ispitanika *izvan navedenih grupacija*, Scheffeovim *post hoc* testom uočene su statistički značajno više ( $p < 0,05$ ) srednje vrijednosti prema OHIP-u za domene psihičke nesposobnosti, socijalne nesposobnosti i hendikepa (tablica 3.). S obzirom na vrstu proteze, statistički značajni ( $p < 0,05$ ) rezultati su veća fizička bol kod nositelja samo donjeg CRDP-a ( $X=8,41$ ) u odnosu na nositelje gornjeg i donjeg CRDP-a ( $X=4,63$ ), veća socijalna nesposobnost kod nositelja samo gornjeg CRDP-a ( $X=2,14$ ) u odnosu na nositelje gornjeg i donjeg CRDP-a ( $X=0,88$ ) i veći hendikep nositelja samo gornjeg CRDP-a ( $X=3,79$ ) u odnosu na nositelje gornjeg i donjeg CRDP-a ( $X=2,36$ ). U tablici 4. nalaze

According to the participants' gender, age of current CRDP, and denture wearing habit ("day-night" or just "daily" CRDP wearing), no statistically significant differences were revealed ( $p > 0,05$ ).

According to the residence place size, statistically significant ( $p < 0,05$ ) higher mean value of OHIP score was yielded for each of 7 OHIP domains and for OHIP summary score among participants coming from places with less than 10,000 residents in comparison to participants from more populated places (Table 2). According to the level of education, Scheffe post hoc test revealed statistically significant ( $p < 0,05$ ) difference between OHIP score mean values for psychological disability between NS participants ( $X=5.32$ ), CO participants ( $X=1.51$ ), and ES participants ( $X=1.70$ ). Taking into account participants' profession group, Scheffe post hoc test revealed statistically significant ( $p < 0,05$ ) differences in OHIP mean values for psychological disability, social disability, and handicap, with higher OHIP mean value for agriculture group and participants "outside of mentioned groups" (Table 3). According to the type of removable dental prosthesis, Scheffe post hoc test revealed statistically significant ( $p < 0,05$ ) results as follows: higher physical pain for only mandibular CRDP wearers ( $X=8.41$ ) compared to wearers of both mandibular and maxillary CRDP ( $X=4.63$ ); higher social disability in only maxillary CRDP wearers ( $X=2.14$ ) compared to wearers of

**Tablica 4.** Prikaz statistički značajnih razlika između srednjih vrijednosti bodova (OHIP) prema skupinama i broja bodova među ispitanicima s obzirom na to koliko dugo nose proteze (stare i postojeće).  
**Table 4** Statistically significant differences in mean OHIP scores and summary score between groups of participants according to the time of denture wearing period (previous and current dentures)

OHIP 49	Period nošenja proteza (starih i postojećih) izražen u godinama • Time of denture (previous and current dentures) wearing in years		Srednja vrijednost razlika • Mean value difference	p	SE
Funkcijsko ograničenje • Functional limitation	0 - 5	>30	4.25	0.03*	1.30
		10 - 20	4.97	0.00*	1.14
	5 - 10	20 - 30	5.46	0.00*	1.08
		>30	6.71	0.00*	1.24
Fizička bol • Physical pain	0 - 5	>30	3.56	0.02*	1.07
	5 - 10	>30	3.50	0.02*	1.02
		10 - 20	2.72	0.01*	0.74
Psihička nelagoda • Psychological discomfort	0 - 5	20 - 30	3.36	0.00*	0.71
		>30	3.83	0.00*	0.79
		20 - 30	2.17	0.03*	0.66
	5 - 10	>30	2.65	0.01*	0.75
		>30	4.88	0.02*	1.44
Fizička nesposobnost • Physical disability	0 - 5	20 - 30	2.89	0.04*	0.90
		>30	3.65	0.01*	1.02
	5 - 10	>30	3.05	0.04*	0.96
Socijalna nesposobnost • Social disability	5 - 10	20 - 30	2.26	0.02*	0.66
Hendikep • Handicap	0 - 5	>30	3.16	0.01*	0.88
		20 - 30	19.19	0.02*	5.62
Zbroj bodova • Summary score	0 - 5	>30	24.74	0.00*	6.32
		10 - 20	17.31	0.04*	5.55
	5 - 10	20 - 30	20.05	0.00*	5.26
		>30	25.60	0.00*	6.00

p - p vrijednost • p value, SE - standardna pogreška • standard error, \* $p < 0,05$

se statistički značajni rezultati za svaku domenu u OHIP-u dobiveni s obzirom na dužinu (izraženu u godinama) nošenja proteza (stare i postojeće proteze).

## Rasprava

U ovom istraživanju sudjelovali su ispitanici starije životne dobi, nositelji CRDP-a, kako bi se ispitalo OHRQoL primjenom upitnika OHIP - 49 (12). U istraživanju je korištena verzija upitnika (12) prevedena na hrvatski jezik i prilagođena kulturološkim karakteristikama u Hrvatskoj. Sve komponente OHRQoL-a jednako su važne pri subjektivnoj procjeni oralnoga zdravlja i njegova utjecaja na kvalitetu života. Prema rezultatima ovog istraživanja, najviše srednje vrijednosti u OHIP-u uočene su u domeni funkcijskog ograničenja, fizičke boli i fizičke nesposobnosti, drugim riječima, pacijenti su najviše teškoća imali tijekom žvakanja i govora, zatim tu su problemi poput neugodnog zadaha, promjene okusa i odabira hrane, oralne boli (akutna ili kronična), glavobolje, poteškoće pri komunikaciji i socijalnoj interakciji te pri čišćenju CRDP-a. Slične rezultate opisali su Baretto i suradnici (13) s naglaskom na poboljšanje oralnoga zdravlja nakon izrade novih protetskih radova. Također navode da dobra oralna rehabilitacija pozitivno utječe na tjelesno, socijalno i psihološko stanje pacijenta (13). Zlatarić i suradnici (21) pokušali su utvrditi čimbenike koji utječu na varijabilnost u zadovoljstvu pacijenata njihovim protezama. Zaključili su kako estetika, retencija, govor, žvakanje i ugodnost pri nošenju proteza značajno utječu na zadovoljstvo pacijenata pomičnim protezama, pa bi navedeni čimbenici mogli biti važni pri procjeni OHRQoL-a (21). Za spomenute faktore, uključene u upitnik OHIP - 49, u našem su istraživanju dobivene najviše vrijednosti.

Kotzer i suradnici (22) zaključili su da referencije na kojima ljudi temelje mišljenje o oralnom zdravlju ovise o mnogo čimbenika. Često uspoređuju svoje opće i oralno zdravlje sa zdravstvenim stanjem svojih vršnjaka ili zdravlje procjenjuju na temelju vlastita tjelesnog i emocionalnog stanja. Drugi, pak, koji svoje oralno zdravlje već smatraju lošim, zapravo razvijaju određeni stupanj zadovoljstva takvim stanjem (22). Prema našim rezultatima, dob, stupanj obrazovanja, zanimanje i veličina mjesta stanovanja ispitanika, vrsta CRDP-a i koliko traje razdoblje nošenja proteze značajno utječu na OHRQoL. Veličina mjesta stanovanja, zanimanje i trajanje razdoblje nošenja proteze pokazali su najveći utjecaj na OHRQoL u gotovo svim domenama upitnika OHIP - 49. Može se pretpostaviti da će mlađi ispitanici i oni niže stupnja obrazovanja (posebno s NS-om i ES-om) očekivati nerealno više od protetske terapije zbog nerazumijevanja funkcijskih ograničenja terapije s pomičnim protezama i česte usporebe s prirodnim zubima (23). Smith i suradnici navode da očekivanja pacijenata variraju individualno, a razlike u očekivanju postoje i između pacijenata zbrinutih u klinikama gdje se provodi stomatološka edukacija i onih iz standar-

both mandibular and maxillary CRDP ( $X=0.88$ ); and bigger handicap in only maxillary CRDP wearers ( $X=3.79$ ) compared to wearers of both mandibular and maxillary CRDP ( $X=2.36$ ). With regard to the length of denture wearing period (previous and current removable dental prosthesis, expressed in years), statistically significant differences were revealed in each OHIP domain (Table 4).

## Discussion

In this study, the elderly patients wearing CRDP were chosen as participants to reveal their current OHRQoL, using OHIP-49 questionnaire (12). The original OHIP-49 questionnaire was translated into the Croatian language and adapted to Croatian cultural environment. Therefore, this Croatian version of OHIP-49 questionnaire (12) was very suitable for use in this study. All components of OHRQoL were equally important in formation of subjective assessment of oral health and its impact on quality of life. Generally, in this study, the highest OHIP mean values were observed in domains of functional limitation, physical pain, and physical disability meaning that the most of participants' difficulties with CRDPs were related to mastication, speech, bad odor, taste and type of food, oral pain (acute or chronic), headache, communication, social interactions, and CRDP cleaning difficulties. Similar results were reported by Baretto et al., (13) with the emphasis on improvement of oral health after new dentures were produced. Baretto et al. also stated that good oral rehabilitation has a positive impact on the physical, social, and psychological well-being of patients (13). Study conducted by Zlatarić et al. (21) tried to identify factors influencing variability in general patient satisfaction with their dentures. Authors of that study concluded that esthetics, retention, speech, chewing, and comfort of denture wearing significantly influence patients' satisfaction with removable dental prostheses and therefore could be important factors for assessing OHRQoL (21). In our study, these factors were also included in OHIP-49 questionnaire domains revealing the highest values.

Kotzer et al. (22) concluded that references on which people base their oral health can range depending on a host of variables. Often, people compare their general health status as well as their oral health condition with health condition of other people with the same age, some use their physical and emotional state to assess oral health, while others who have, or perceive themselves as having poor oral health, may actually be satisfied with the state of their oral health (22). According to the results from this study, the examined factors such as participants' age, education, profession, residence place size, type of CRDP, and the time of denture wearing period significantly affected OHRQoL. Residence place size, profession, and the time of denture wearing period were factors with the highest impact on OHRQoL, affecting almost all domains from OHIP-49 questionnaire. It is logical to assume that younger participants and those with lower level of education (especially NS and ES participants) have greater expectations (even unrealistic) due to the lack of understanding of functional limitations of CRDP treatment, often comparing the dentures to their natural teeth (23). Smith et al. re-

dnih stomatoloških ordinacija (24). Znatno broj pacijenata s klinika gdje se provodi stomatološka izobrazba smatra *odsutnost boli i dobar zagriz* ključnim karakteristikama terapije potpunim protezama (24). U našem istraživanju uočen je veći utjecaj na OHRQoL među mlađim ispitanicima, osobito u domeni psihičke nelagode i nesposobnosti te među onima s NS-om samo u domeni psihičke nesposobnosti. Budući da starenjem pojedini pacijenti prihvaćaju činjenicu da je njihovo zdravlje loše, manje ili čak veće probleme vezane za oralno zdravlje smatraju beznačajnima (22), a to bi mogao biti razlog zašto je manji utjecaj na OHRQoL primijećen među starijim ispitanicima. Nadalje, prema rezultatima istraživanja provedenog u Kanadi (nisu bili isključivo protetski pacijenti), Kotzer i suradnici utvrdili su lošiji OHRQoL među stanovnicima ruralnih područja u odnosu prema onima iz razvijenijih krajeva (22). Prema našim rezultatima stanovnici iz manjih (ruralnih) mjesta i oni koji kraće nose CRDP bili su nezadovoljniji svojom protezom, uz negativan utjecaj na OHRQoL. Niže srednje vrijednosti dobivene su u OHIP-u od skupine pacijenata s duljim razdobljem nošenja proteze (10 godina i više). Ako dulje nose protezu, većina pacijenata prihvaća njihova funkcijska ograničenja i razvija određeni stupanj zadovoljstva (19). Bezubim pacijentima velik je problem resorpcija alveolarnog grebena koja počinje nakon vađenja zuba. Progresivna resorpcija često završava kliničkim stanjem s preostalim koštanim grebenom nedostatnim za dobru funkciju CRDP-a (25). Taj je problem posebno izražen u donjoj čeljusti (25), a zbog nepovoljnog oblika alveolarnog grebena ne može se postići dobra retencija i stabilnost proteze. Nezadovoljavajuća funkcija proteze svakako utječe na zadovoljstvo pacijenta i njegov OHRQoL. Iako se može očekivati općenito veće nezadovoljstvo među nositeljima donjeg CRDP-a (u usporedbi s ostalim ispitanicima), u ovom istraživanju uočena je samo veća fizička bol nositelja donjeg CRDP-a u odnosu na nositelje obiju (gornje i donje) proteza. To bi se moglo objasniti već navedenom činjenicom da se tijekom nošenja proteze pacijenti postupno prilagođavaju promjenama koje nastaju na koštanoj ležištu i u prilijeganju baze proteze na ležište (19). U obzir treba uzeti i činjenicu da zadovoljstvo pacijenata protezama nije uvijek u skladu sa stomatologovom procjenom kvalitete proteze (5).

## Zaključak

Dobiveni rezultati upućuju na značajan utjecaj općih i sociodemografskih čimbenika na subjektivnu procjenu ispitanika o oralnom zdravlju. Čimbenici poput dobi ispitanika, stupnja obrazovanja, zanimanja, veličine mjesta stanovanja, vrste CRDP-a i duljine razdoblja nošenja proteza, značajno utječu na OHRQoL. Dob ispitanika, manje mjesto stanovanja, niži stupanj školovanja i kraće razdoblje nošenja proteza imali su veći utjecaj na OHRQoL među nositeljima CRDP-a.

ported that patients' expectations of complete dentures may differ between individuals but also between patient groups managed in teaching hospitals and dental practices (24). Significant number of patients from teaching hospitals considered "absence of pain" and "presence of good bite" as essential properties of complete dentures (24). According to the results of this study, a higher impact on OHRQoL was observed among younger participants (less than 65 years), especially in domains of psychological discomfort and disability, and among NS participants just in domain of psychological disability. As patients age, some of them accept that their health is deteriorating so they are more likely to consider minor or even severe oral health problems as insignificant (22). That could be a reason why lower impact on OHRQoL was noticed among older participants. Furthermore, in a study conducted on Canadian population (not exclusively prosthetic patients), Kotzer et al. concluded that people in rural areas have the poorest OHRQoL due to decreased access to dental care opposed to people from urban areas (22). According to our results, it could be stated that participants from smaller (rural) places and also participants with shorter period of denture wearing were more dissatisfied with CRDP with negative impact on OHRQoL. Among the participants with longer denture wearing period (10 years and more), a lower mean value of OHIP score was found. It seems that during a longer denture wearing period, most patients learn to accept functional limitations of dentures and establish a certain satisfaction level (19). Another important problem for edentulous patients is residual ridge resorption, which starts after teeth extraction. If progressive, it often leads to a clinical situation with insufficient bone support for the proper functioning of CRDP (25). This problem is especially expressed in the mandible (25) giving unfavorable shape of residual ridge compromising removable prosthesis' retention and stability. Its function will become insufficient, thus affecting patient's satisfaction and OHRQoL. Therefore, overall higher dissatisfaction among mandibular CRDP wearers (compared to the other participants) was expected. Unexpectedly, just a higher physical pain for mandibular CRDP wearers (compared to both maxillary and mandibular CRDP wearers) was revealed. A possible explanation could be in aforementioned fact that patients adjust to gradual changes in denture fit and alterations in supporting bone during the denture wearing period (19). Also, patients' satisfaction with their dentures is not always correlated to the assessment of dentures by dentists, so this difference should be also considered in this case (5).

## Conclusion

The obtained results among CRDP wearers revealed significant influence of general and sociodemographic factors on subjective participants' perception of oral health and OHRQoL. Factors such as participant's age, education, profession, residence place size, type of CRDP, and the length of denture wearing period significantly correlates with OHRQoL. Factors such as participant's age, smaller residence place size, lower level of education, and shorter period of denture wearing had higher impact on OHRQoL among CRDP wearers.



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## Izjava

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## Conflict of interest

None to declare.

### Abstract

**Objective of work:** Oral health-related quality of life (OHRQoL) as a multidimensional concept is affected by many factors. Therefore, the aim of this study was to determine which demographic and subjective factors are significantly affecting the OHRQoL among the elderly people wearing complete removable dental prostheses (CRDP). **Materials and Methods:** This questionnaire-based study included 301 participants, residents of elderly care homes (in Zagreb and Slavonki Brod, Croatia) wearing maxillary and/or mandibular CRDP. The questionnaire used in this study consisted of two sections; the first section included questions giving general information and in the second section the Croatian version of Oral Health Impact Profile (OHIP)-49 questionnaire with 49 items representing seven OHIP domains was used. **Results:** Participants were aged between 60–99 years, with average age of  $74 \pm 12.1$  years. OHIP summary score was 26.5. The highest average OHIP mean values in the domain of functional limitation amounted to 6.7, physical pain 5.1, and physical disability 5.9. The participants' age, education, profession, residence place size, type of CRDP, and the time of denture wearing period all statistically significantly affected OHRQoL ( $p < 0.05$ ). **Conclusions:** General and sociodemographic factors had a significant influence on the participant's subjective perception of oral health and OHRQoL. Younger participants, participants from rural places, those with lower levels of education, and shorter period of denture wearing demonstrated a higher impact on OHRQoL.

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### Key words

Denture, Partial, Removable; Aged; Personal Satisfaction; Quality of Life

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