

# The First Fifty Years of the Journal Acta Stomatologica Croatica (1966 - 2016): Citation Analysis

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## Prvih pedeset godina časopisa *Acta stomatologica Croatica* (1966. – 2016.): citatna analiza

### *The First Fifty Years of the Journal Acta Stomatologica Croatica (1966 - 2016): Citation Analysis*

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#### Sažetak

Povodom pedeset godina izlaženja od (1966. do 2016.) napravljena je citatna analiza časopisa *Acta stomatologica Croatica* (ASCRO). **Svrha:** Namjera je bila utvrditi utjecaj promjena nastalih u posljednjih deset godina na vidljivost i citiranost ASCRO-a usporedbom dobivenih rezultata s rezultatima citatne analize ASCRO-a iz 2008. **Materijali i metode:** Uzorak je pribavljen pretraživanjem baze podataka Web of Science Core Collection, a podatci su obrađeni deskriptivnom statistikom. **Rezultati:** U ASCRO-u je objavljeno ukupno 1618 radova, a citirano je 477 za koje je zabilježeno 903 citata. Svaki objavljeni rad citiran je prosječno 0,6 puta, a svaki od citiranih radova dobio je prosječno 1,9 citata. Najveći broj citata po radu je 20, a najviše citata po godini je 63 u 1991. Prema starosti rada najviše citata dobilo je 96 radova u trećoj godini poslije objavljivanja, a najstariji citirani radovi napisani su prije 45 godina. ASCRO je citiran u 302 časopisa, a najviše citata (19 %) zabilježeno je u Coll. Antropolu. Od ukupno 903 citata 41 % citirali su samo hrvatski autori, 3,7 % radova citirali su hrvatski i strani autori, a 55,3 % radova citirali su samo strani autori. ASCRO su citirali autori iz 73 države – 33 su europske, 19 je azijskih, 10 američkih, 9 afričkih i 2 države Australije i Oceanije. **Zaključak:** U svim analiziranim parametrima zabilježen je rast kvalitete ASCRO-a u posljednjih deset godina u odnosu prema rezultatima dobivenima citatnom analizom 2008.

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#### Ključne riječi

bibliometrija; stomatološki časopisi;  
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#### Uvod

Pedeset godina objavljivanja časopisa respektabilan je povod za retrospektivni pregled njegova rasta i razvoja. Davne 1966. časopis *Acta stomatologica Croatica* (u nastavku ASCRO) pokrenuli su Društvo zubozdravstvenih radnika Hrvatske, Stomatološke sekcije Zbora liječnika Hrvatske i Stomatološki fakultet Sveučilišta u Zagrebu. Objavljuju se četiri broja na godinu u jednom svesku, a jedina iznimka je svezak 7. koji je izašao 1972./73. godine. Na početku tiskani su radovi koji su zanimali kako stomatologe tako i zubne tehničare i sestre. Imali su sažetke na hrvatskom, engleskom i njemačkom jeziku (s vremenom se prestaje koristiti) te popis korištene literature. Do 1987. godine pisani su isključivo hrvatskim jezikom, a tada se pojavljuju prvi radovi na engleskome. Značajna promjena događa se 1998. godine od kada se svi radovi objavljuju dvojezično – na hrvatskome i engleskome. Ta praksa zadržana je do danas i svakako pridonosi razvoju hrvatske stručne terminologije. Ujedno omogućuje nesmetanu komunikaciju sa svjetskom znanstvenom zajednicom. Svi radovi podliježu dvostrukom slijepom recenzentskom postupku domaćih i stranih recenzentata.

Sljedeći veliki pomak u razvoju časopisa učinjen je 2006.

#### Introduction

The journal's fifty years of continuous publishing is a respectable occasion for a retrospective review of the growth and development of the journal. In 1966, the journal *Acta Stomatologica Croatica* (hereinafter: ASCRO) was initiated by the Society of Croatian Dental Health Workers, the Dental Section of the Croatian Medical Association and the School of Dental Medicine of the University of Zagreb. It publishes four issues per year in one volume, and the only exception is Volume 7 published in 1972/73. At the beginning, only the papers that were of interest to dentists as well as to dental technicians and nurses were published. The papers were provided with summaries in Croatian, English and German (no longer being used over time), and they contained references. By 1987, they were written in Croatian only when the first papers appeared in English. A significant change occurred in 1998 since when all the papers have been written bilingually, that is, in Croatian and English. This practice has been retained to date and certainly contributes to the development of Croatian professional terminology. It also provides uninterrupted communication with the world scientific community. All papers are subject to double blind review by do-

godine kada je počelo usporedno izdavanje tiskane i internet-ske inačice (1). Izdavač je tada odlučio dopustiti pristup cjelovitom tekstu radova slobodno i besplatno svim zainteresiranim stručnjacima, znanstvenicima i najširoj javnosti.

**Hrčak: portal znanstvenih časopisa Republike Hrvatske** – je portal koji na jednom mjestu okuplja hrvatske znanstvene i stručne časopise koji nude otvoreni pristup svojim radovima. Časopis ASCRO uključen je u Hrčak 2006. godine, (2). U prvoj fazi na tom portalu objavljeno je 8 godišta časopisa (2000.;34 – 2007.;41) koje je tiskara imala arhivirane u pdf formatu. Tekući brojevi objavljeni su odmah nakon izlaska tiskane inačice časopisa. Portal Hrčak ponudio je izvanrednu tehničko-informatičku potporu uredništvima pa se vrlo brzo pojavila zamisao o digitalizaciji starijih godišta. Za to je okupljen tim suradnika, no nitko od njih nije bio stručno osposobljen za taj posao pa su bile potrebne pripreme. Digitalizacija je obavljena u tri godine (2011. – 2014.), pri čemu su obuhvaćena trideset i tri godišta časopisa (1966.;1 – 1999.;33) (3). Dakle, od 2014. godine kompletan ASCRO postao je globalno dostupan.

**DOAJ (Directory of Open Access Journals)** – multidisciplinarna baza koja indeksira više od 12 000 znanstvenih i stručnih elektroničkih časopisa dostupnih u otvorenom pristupu. ASCRO je uključen u tu bazu od 2007. godine. Cjeloviti tekstovi članaka bili su dostupni preko poveznice na Hrčak sve do 2017. kada uredništvo počinje dostavljati članke u XML formatu sa svim metapodacima. Pohranom metapodataka članci se mogu pretraživati u DOAJ-u. Iste, 2017. godine, ASCRO je uspješno prošao postupak reevaluacije, a trenutačno ih je 163 od 2014. do 2017. ASCRO je uspješno prošao postupak reevaluacije (4).

**EBSCO – Dentistry & Oral Sciences Source** američki je agregator koji nudi informacijske servise za akademsku i istraživačku zajednicu. Uredništvo ASCRO-a sklopilo je 2008. godine ugovor o uključivanju u specijaliziranu bazu Dentistry & Oral Sciences Source. Dostupna je isključivo pretplatnicima.

**Scopus** – Elsevierova indeksna citatna baza predstavljena je 2004. godine. ASCRO je 2009., nakon završetka postupka procjene kvalitete časopisa, uključen u korpus indeksiranih časopisa.

**CrossRef DOI (Digital Object Identifier)** – uredništvo je registriralo ASCRO u International DOI Foundationu te se od 2015. godine (od broja 3.) svim objavljenim člancima dodjeljuje oznaka DOI. Tako je korisnicima dodatno olakšan pristup cjelovitom tekstu.

**CrossRef Similarity Check** – jedna je od usluga Crossref fondacije koja pomaže uredništvima časopisa provjeriti izvornost primljenog rukopisa prije njegova slanja na recenziju. Tako je od 2015. godine znatno smanjena mogućnost objavljivanja radova s nevjerođostojnim podacima i istraživanjima, no nije potpuno otklonjena.

**PMC (PubMed Central)** – baza biomedicinskih časopisa s osiguranim pristupom cjelovitom tekstu otvorila je vrata ASCRO-u u svibnju 2016. Postupak procjene trajao je tri godine uglavnom zbog poteškoća s finim podešavanjem XML formata bibliografskog zapisa. Uključivanje u bazu bilo je moguće tek kada su svi elementi zapisa bili potpuno kompa-

mestic and foreign reviewers.

The next major step in the development of the journal was made in 2006 when the parallel publication of printed and online versions started (1). The publisher then decided to give access to the full text of the work freely and free of charge to all interested experts, scientists and the general public.

**Hrcak: a portal of the Croatian scientific journals** - Since 2006, ASCRO has been part of Hrcak, a portal that brings together Croatian scientific and professional journals that offer open access to their scientific papers (2). In the first stage, 8 journal years (2000; 34 - 2007; 41) were published by the press in pdf format on the Hrčak portal. Current numbers are published immediately after the release of the printed version of the journal. Hrčak Portal offered outstanding technical and informational support to the editorial staff, hence the idea of digitalization of older years was rapidly emerging. For its implementation, a team of associates was assembled, none of whom was skilled for this job and preparations were made. The digitization was done in three years (2011 - 2014), covering the thirty and three years of the journal (1966; 1 - 1999, 33) (3). In this way, the complete ASCRO has become globally available since 2014.

**DOAJ (Directory of Open Access Journals)** is a multidisciplinary database that indexes more than 12,000 scientific and professional electronic journals available in open access. ASCRO has been involved in the DOJ base since 2007. The full text of the article was available through the link to Hrcak until 2017 when the editorial board starts submitting articles in XML format with all metadata. By storing metadata, articles are searchable through DOAJ. In the same year, in 2017, ASCRO successfully passed the reevaluation process.

**EBSCO - Dentistry & Oral Sciences Source** - EBSCO is an American aggregator offering information services for the academic and research community. In 2008, ASCRO's Editorial Board signed an Inclusion Contract in a specialized database of Dentistry & Oral Sciences Source. The base is only available to subscribers.

**Scopus** - is Elsevier index citation database presented in 2004. In 2009, after completing the quality review process, ASCRO was included in the indexed journal corpus.

**CrossRef DOI (Digital Object Identifier)** - The Editorial Board has registered ASCRO in the International DOI Foundation and all articles that have been published since 2015 have been assigned a DOI tag (from issue 3). In this way, the users of ASCRO are additionally facilitated access to the full text of the article.

**CrossRef Similarity Check** - one of the Crossref Foundation services that helps journal editors check the content of the received handwriting before submitting it to the review. Thus, since 2015, the possibility of publishing articles with unreliable data and research has been significantly reduced, but it has not been completely eliminated.

**PMC (PubMed Central)** - a biomedical journal database with a secured access to full text articles opened the "door" of ASCRO in May 2016. The evaluation process lasted for three years mainly due to problems with fine-tuning the XML format of the bibliographic record. Inclusion in the database was only possible when all the track elements were fully compati-

tibilni. Pretraživanjem PubMedove bibliografske baze dostupni su radovi objavljeni u ASCRO-u od 2014. godine.

Licencija Creative Commons – uvedena je 2017. godine, a uredništvo se od ponuđenih mogućnosti odlučilo za razinu prava Creative Commons Attribution-NonCommercial-NoDerivates 4.0 International Licence. Ta licencija dopušta svima preuzimanje članaka i dijeljenje s drugima pod uvjetom da navedu bibliografske podatke izvornika. Preuzete članke ne smiju mijenjati niti se njima koristiti u komercijalne svrhe bez pisanog odobrenja nositelja vlasničkih prava.

ESCI (*Emerging Sources Citation Index*) – dio je baze podataka Web of Science Core Collection, a od 2018. godine ASCRO je uključen u indeksnu bazu. Time je uredništvo dobilo priznanje za svoj rad i ohrabrenje za podizanje praga kvalitete pri vrjednovanju primljenih rukopisa.

Cilj istraživanja bio je utvrditi utjecaj promjena koje je uredništvo ugradilo u ASCRO posljednjih deset godina kad je riječ o vidljivosti i citiranosti časopisa. Budući da postoji citatna analiza ASCRO-a iz 2008. godine, usporedit će se rezultati gdje je to moguće i prikladno (5).

## Materijal i metode

U radu je obrađeno 50 svezaka/godišta časopisa u kojima je ukupno objavljeno 1618 radova. Pretraživanje baze podataka WoS Core Collection obavljeno je u ožujku 2018. za razdoblje od 1966. do 2016. godine. Budući da ASCRO nije indeksiran u bazama WoS-a u analiziranom razdoblju, podatke o citatima nije moguće dobiti koristeći se Basic Searchom. Pretraživanje je obavljeno u Cited Reference Searchu prema polju Cited Work. To znači da su pretraživanjem obuhvaćeni samo citati radova iz ASCRO-a ako su objavljeni u časopisu indeksiranom u bazama WoS-a. Citati u svim drugim časopisima za analizu su izgubljeni. Uz to, u neindeksiranim časopisima naziv časopisa nije normiran. Bilježi se u obliku kako ga je naveo autor citirajućeg rada pa se pronalaze mnogobrojne varijante naziva istog časopisa.

U nastojanju da se prikupe što potpuniji rezultati, u postavljanju informacijskog upita korišteno je desno kraćenje, a kriterij pretraživanja bio je  $act^* sto^* c^*$ . Zbog korištenja desnog kraćenja, osim citata ASCRO-a, dobili smo manji broj citata drugih publikacija koji su ručno uklonjeni. Rezultati pretraživanja pohranjeni su u program Excel. Najprije je učinjena deduplikacija istih zapisa tako da su radovi presloženi abecedno prema koloni *Autor*, zatim prema koloni *Naslov* rada te prema koloni *Godina*. Tako su pronađeni bibliografski zapisi istih radova navedenih na različite načine. Citati istog rada zbrojeni su i pridruženi najpotpunijem bibliografskom opisu rada.

Bibliografski podatci citirajućih radova prikupljeni su tako da je svaki zapis ručno prebačen u tablicu MS Excela. Statistička obrada podataka obavljena je metodom deskriptivne statistike.

By browsing the PubMed bibliographic database, articles published in ASCRO from 2014 have been available.

Creative Commons License - Introduced in 2017, and the Editorial Board of the offered options has opted for the level of the Creative Commons Attribution-NonCommercial-NoDerivates 4.0 International License. This license allows everyone to download articles and share with others if they provide the source bibliographic data. The articles that are used for commercial purposes must not be modified without the written permission of the proprietor.

ESCI (Emerging Sources Citation Index) is an integral part of the Web of Science Core Collection, and since 2018 ASCRO has been included in the index database. This is why the Editorial Board received recognition for its work and encouragement to raise the quality threshold when evaluating the received manuscripts.

The aim of the study was to determine the impact of changes which the Editorial Board have incorporated into ASCRO for the past ten years thus affecting its visibility and citation. Since there is a citation analysis of ASCRO from 2008, a comparison of results has been made where possible and appropriate (4).

## Material and Methods

This paper deals with 50 volumes / years of the ASCRO journal in which 1,618 papers were published. Searching for the WoS Core Collection database was done in March 2018 for the range of 1966 to 2016. Since ASCRO was not indexed in WoS bases in the analyzed period, a citation data analysis could not be obtained using Basic Search. The search was done in Cited Reference Search by the Cited Work field. This means that the search involved only citations from ASCRO papers if they had been published in a journal which was indexed in WoS databases. The citations from all other journals were lost for the analysis. In addition, the name of the journal in non-indexed journals was not standardized. It has been noted in the form stated by the author of the cited paper. Numerous variants of the name of the same journal have been found.

In the effort to collect as complete results as possible, in setting up an information query, a right shortcut was used, and the search criterion was  $act^* sto^* c^*$ . Due to the use of the right skid, apart from the ASCRO citations, we have received a smaller number of other publications that have been manually removed. The search results were stored in Excel program. First, the deduplication of the same records was made in such a fashion that the papers were preceded by columns Author, followed by Column Title, and then by column Year. In this way, bibliographic records of the same papers that were stated in different ways were found. Citations of the same paper were summed up and associated with the most complete bibliographic description of the paper.

The bibliographic data of the cited papers were collected in such a way that each individual record was manually transferred to the MS Excel table. Statistical data processing was done using the method of descriptive statistics.

## Rezultati

U analiziranom razdoblju ukupno je objavljeno 1618 radova, što prosječno na godinu iznosi 32,4 rada. Baza je pretražena prema nazivu časopisa, a korišteni su grafemi Act\* sto\* c\*, uz upotrebu desnog kraćenja zbog što potpunijeg obuhvata radova. Pretraživanjem su se dobila 642 rada. Izlučivanjem radova koji se odnose na druge časopise ostao je 561 rad iz ASCRO-a. Zatim je obavljena deduplikacija te je izlučeno 477 radova koji čine uzorak za analizu. Za analizirane radove ukupno su zabilježena 903 citata. Svaki od ukupno objavljenih 1618 radova prosječno je citiran 0,6 puta. Od 477 citiranih radova svaki je prosječno dobio 1,9 citata.

### Analiza citiranih radova

#### Analiza broja citata po radu

Raspon broja citata kreće se od 1 do najviše 20 citata po radu. U tablici 1. razdioba je radova prema broju citata. Kao što se i očekivalo, najviše radova, tj. njih 286 dobilo je jedan citat (60 %). Nakon toga broj radova s dva citata naglo pada na 96 radova (20,1 %), a zatim slijedi 49 radova s tri citata (10,3 %). Samo 45 preostalih radova dobilo je četiri ili više citata.

Prikaz odnosa broja objavljenih radova i zabilježenih citata po godinama vidi na slici 1. Raspon broja radova kreće se od najmanje 16 radova objavljenih 1980. godine do najviše 43 objavljena 1997. Čak trideset i pet godina objavljivano je između 30 i 40 radova na godinu, što je očito optimalan broj u ovoj izdavačkoj koncepciji. Od 1966. do 2016. prosječno su na godinu objavljena 32 rada.

## Results

In the analyzed period, 1,618 papers were published, which averaged to an annual rate of 32.4. The database was searched by the name of the journal, and the Act \* sto \* c \* graphs were employed using the right skid, for the most complete coverage of the papers. The search resulted in 642 papers. 561 papers from ASCRO were found by extracting papers referring to other publications. Subsequently, the deduplication was performed and 477 papers were taken to make the sample for the analysis. For the analyzed papers, 903 citations were recorded. Out of the total of 1,618 papers, each paper was cited on average 0.6 times. Out of the total of 477 cited papers, each paper received 1.9 citations on average.

### Analysis of the cited papers

#### The analysis of the number of citations per paper

The number of citations ranges from 1 to a maximum of 20 citations per paper. Table 1 shows the distribution of papers by number of citations. Since most of the papers were expected, *i.e.* 286 received one citation (60%). Subsequently, the number of papers with two citations suddenly dropped to 96 papers (20.1%), followed by 49 papers with three citations (10.3%). Only 45 of the remaining papers received four or more citations.

#### Table 1 Distribution of papers by number of citations

Figure 1 shows the number of published papers and the number of citations per year. The range of papers is from a minimum of 16 papers published in 1980 to a maximum of 43 papers published in 1997. Between 30 and 40 papers have been published per year in the period of thirty-five years, which is clearly the optimum number in this publishing concept. From 1966 to 2016, 32 papers on average were published per year.

**Tablica 1.** Razdioba radova prema broju citata  
**Table 1** Distribution of the papers per number of citations

<b>Broj radova • Number of articles</b>	286	96	49	17	11	7	3	1	2	2	1	1
<b>Broj citata • Number of citations</b>	1	2	3	4	5	6	7	8	9	10	14	20
<b>%</b>	60,0	20,1	10,3	3,6	2,3	1,5	0,6	0,2	0,4	0,4	0,2	0,2

#### Analiza broja citata po godinama

Raspon broja citata po godinama kreće se od 0 do 63 citata. Ni jedan citat nije zabilježen za radove objavljene 1976. i 1980. godine, a najviše – 63 citata dobili su radovi iz 1991. Pri analizi broja citata po godini mogu se uočiti tri razdoblja. Radovi objavljeni u prvih šesnaest godina (1966. – 1981.) prosječno su dobili samo 2,4 citata po godini. U sljedećih šesnaest godina (1982. – 1997.) objavljeni radovi prosječno su dobili 16,5 citata po godini, a u posljednjih osamnaest godina (1998. – 2016.) prosječno su zabilježena 33 citata po godini (slika 1.).

#### Analiza citata prema starosti

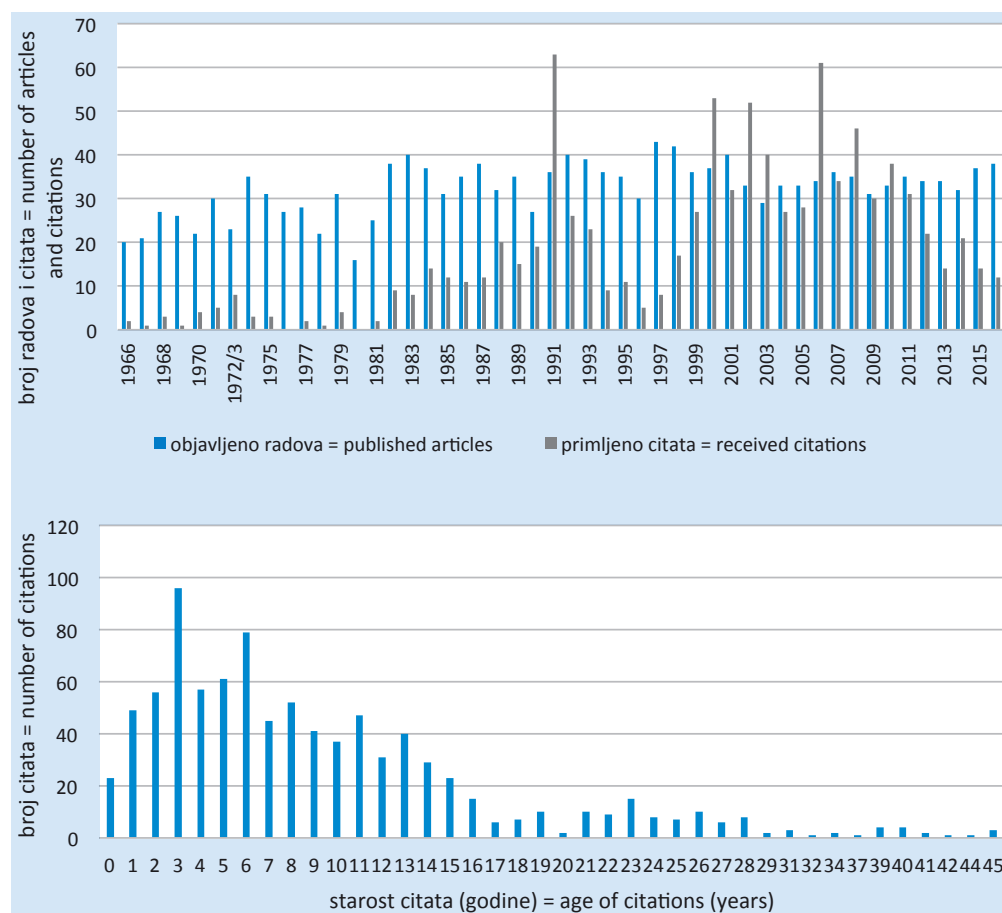
Raspon starosti citiranih članaka kreće se od 0 do 45 godina. U nultoj godini citirana su 23 rada. Zatim raste broj ci-

#### Analysis of number of citations per year

The range of citations per year was from 0 to 63 citations. No citation was recorded for papers published in 1976 and 1980, and papers from 1991 received a maximum of 63 citations. When analyzing the number of citations per year, three periods can be observed. Papers published in the first sixteen years (1966 - 1981) received on average only 2.4 citations per year. In the following sixteen years (1982 - 1997), the published papers received on average 16.5 citations per year, while in the last eighteen years (1998 - 2016), 33 citations per year were averaged, Figure 1.

#### Analysis of citations by age

The age range of the cited papers is from 0 to 45 years. In the 0 year, 23 papers were cited. Subsequently, the number of



**Slika 1.** Broj radova i citata po godini  
Figure 1 Number of papers and citations per year  
**Figure 1** Number of papers and citations per year

**Slika 2.** Razdioba citata prema starosti rada  
Figure 2. Distribution of citations by age of the paper

tiranih radova starih jednu (49 radova) i dvije godine (56 radova). Najviše su citirani radovi stari tri godine – njih 96, a zatim 79 radova starih šest godina. Dalje broj citiranih radova gotovo pravilno opada sve do šesnaest godina starosti. Radovi stariji od šesnaest godina rijetko su citirani (slika 2.).

### Analiza citirajućih radova

#### Analiza časopisa citirajućih radova

Radovi objavljeni u ASRR-u citirani su u ukupno 302 časopisa. Analizom je ustanovljeno da je najviše, odnosno 168 citata, zabilježeno u časopisu *Collegium antropologicum*, što je 19 % od ukupnog broja citata. Za sljedeći časopis *Acta clinica Croatica* uočen je nagli pad na 33 citata (3,7 %). Zatim broj citata blago pada, a broj časopisa u kojima su citati zabilježeni blago raste. Po jedan citat registriran je u 174 različita časopisa (tablica 2.).

cited papers which were 1 year old is 49 and those which were two years old are 56. The most frequently cited papers were those which were 3 years old (96), followed by 79 papers that were six years old. In the following period of time, the number of cited papers is almost regularly falling by age of up to sixteen year old papers. The papers older than sixteen years are rarely cited, Figure 2.

### Analysis of the citing papers

#### Analysis of journals with the citing papers

The papers published in ASCRO are cited in a total of 302 journals. The analysis revealed that the largest number (168) of citations was recorded in the *Collegium Antropologicum* journal, representing 19% of the total number of citations. The next issue of *Acta Clinica Croatica* shows a sharp drop, that is, 33 citations (3.7%). Subsequently, the number of citations fell slightly, and the number of journals in which the citations were recorded rose slightly. One citation was registered in 174 different journals, Table 2.

**Tablica 2.** Broj citata po časopisu  
**Table 2** Number of citations per journal

<b>Broj citata • Number of citations</b>	168	33	31	22	14	12	10	8	7	6	5	4	3	2	1
<b>Broj časopisa • Number of journals</b>	1	1	1	1	2	1	6	3	5	7	9	11	25	55	174

### Analiza suautorstva hrvatskih i stranih autora citirajućih radova

Od ukupno 903 citata, ASCRO su citirali samo hrvatski autori u 370 radova (41 %), hrvatski i strani suautori u 33 rada (3,7 %), a u 500 radova (55,3 %) citirali su samo strani autori. U tablici 3. usporedni su podatci o suautorstvu iz ranijeg (5) i sadašnjeg istraživanja.

**Tablica 3.** Suautorstvo citirajućih radova  
**Table 3** Coauthorship of the citing articles

Suautori • Coauthors	2007.		2016.	
	Broj radova	%	Broj radova	%
Hrvatski • Croatian	196	76,3	370	41
Strani • Foreign	54	21	500	55,3
Hrvatski i strani • Croatian and foreign	7	2,7	33	3,7

### Analiza država iz kojih su autori

Za analizu država iz kojih su autori citirajućih radova, podatci su prikupljeni iz detaljnog bibliografskog opisa prema polju afilijacija autora. Kada se u jednom radu pojavilo više suautora iz iste države, država je zabilježena samo jedanput. Radove objavljene u ASCRO-u citirali su autori iz 73 države. Kao što se može i očekivati, najviše su ASCRO citirali autori iz Hrvatske (411 radova), zatim iz Indije u 72 rada, iz Sjedinjenih Američkih Država u 69 radova i iz Srbije u 37 radova. U 34 rada ASCRO su citirali autori iz Brazila i Velike Britanije, u 29 iz Turske, u 25 iz Italije, u 23 iz Kine, u 18 iz Njemačke, u 16 iz Australije i Saudijske Arabije, u 15 iz Irana, u 14 iz Bosne i Hercegovine te u 13 iz Poljske. U 11 radova ASCRO su citirali autori iz Egipta, Francuske i Japana, u 10 radova autori iz Malezije i Španjolske, u 9 radova autori iz Danske, Makedonije, Rumunjske, Slovenije i Tajvana, u 8 radova autori iz Grčke, Kosova i Nizozemske, u 7 radova autori iz Portugala, u 6 radova autori iz Irske i Tajlanda, u 4 rada autori iz Austrije, Južne Koreje, Švedske, Švicarske i Ujedinjenih Arapskih Emirata, u 3 rada autori iz Belgije, Češke, Čilea, Finske, Jordana, Kolumbije i Slovačke, u 2 rada autori iz Argentine, Bangladeša, Bugarske, Crne Gore, Indonezije, Jemena, Južnoafričke Republike, Kostarike, Meksika, Nigerije, Norveške, Novog Zelanda i Pakistana, te u 1 radu ASCRO su citirali autori iz Bocvane, Etiopije, Gane, Izraela, Katara, Kenije, Kuvajta, Mađarske, Malte, Maroka, Perua, Rusije, Sirije, Tanzanije, Ukrajine i Venezuele.

Globalnu sliku komunikabilnosti ASCRO-a nastojalo se dobiti razvrstavanjem država iz kojih su autori citirajućih radova po kontinentima. Tako je analiza pokazala da su autori iz 33 europske države citirali ASCRO u 709 radova, zatim slijede citati autora iz 19 azijskih država u 185 radova, iz deset američkih država u 134 rada, iz devet afričkih država u 21 radu, te iz dviju država Australije i Oceanije u 18 radova. U tablici 4. usporedni su podatci iz ranijeg (4) i sadašnjeg istraživanja o broju država razvrstanih po kontinentima iz kojih su autori citirajućih radova.

### Analysis of co-authorship of the citing papers

Out of a total of 903 citations, ASCRO was cited only by Croatian authors in 370 papers (41%), by Croatian and international co-authors in 33 papers (3.7%), and 500 papers (55.3%) were cited only by international authors. Table 3 shows comparative co-operation data from previous (4) and current research.

### Author country analysis

For the purpose of the analysis of the countries from which the authors of the citing works come from, the data were collected from a detailed bibliographic description according to the author's affiliation field. When several co-authors from one state appeared in one paper, the country was registered only once. The papers published in ASCRO were cited by authors from 73 countries. As expected, the majority of authors who cited ASCRO are from Croatia (411 papers), followed by authors from India in 72 papers, those from the United States in 69 papers, those from Serbia in 37 papers. In 34 papers, ASCRO was cited by authors from Brazil and the United Kingdom; in 29 papers by authors from Turkey; in 25 papers ASCRO was cited by authors from Italy; in 23 papers ASCRO was cited by authors from China; in 18 papers, it was cited by authors from Germany; in 16 papers ASCRO was cited by authors from Australia and Saudi Arabia; in 15 papers it was cited by Iranian authors; in 14 papers by authors from Bosnia and Herzegovina; in 13 papers by authors from Poland. In 11 papers ASCRO was cited by authors from Egypt, France and Japan; in 10 papers by authors from Malaysia and Spain; in 9 papers by authors from Denmark, Macedonia, Romania, Slovenia and Taiwan; in 8 papers by authors from Greece, Kosovo and the Netherlands; in 7 papers by authors from Portugal; in 6 papers by authors from Ireland and Thailand; in 4 papers by authors from Austria, South Korea, Sweden, Switzerland and the United Arab Emirates; in 3 papers by authors from Belgium, Czech Republic, Chile, Finland, Jordan, Slovakia; in 2 papers by authors from Argentina, Bangladesh, Bulgaria, Montenegro, Indonesia, Yemen, South Africa, Costa Rica, Mexico, Nigeria, Norway, New Zealand and Pakistan, and in 1 paper ASCRO was cited by authors from Botswana, Ethiopia, Ghana, Israel, Qatar, Kenya, Kuwait, Hungary, Malta, Morocco, Peru, Russia, Syria, Tanzania, Ukraine and Venezuela.

We aimed to get a global image of ASCRO communicability by classifying the countries from which the authors of the citing papers come and by stating the continents on which they live. Thus, the analysis showed that the authors

**Tablica 4.** Broj država po kontinentima iz kojih su autori citirajućih radova  
**Table 4** Number of countries according to the continents from which the authors come

Kontinent • Continent	Broj država 2007. • Number of countries in in 2007	Broj država 2016. • Number of countries in 2016
Afrika • Africa	1	9
Amerika • America	4	10
Azija • Asia	7	19
Australija i Oceanija • Australia and Oceania	2	2
Europa • Europe	15	33
Ukupno država • Total countries:	29	73

## Rasprava

Istraživanje je pokazalo da je u ASCRO-u od 1966. do 2016. godine objavljeno ukupno 1618 radova. Od ukupnog broja radova citirano je 477 (29,5 %), a ukupno su zabilježena 903 citata. Na temelju toga utvrđeno je da je svaki citirani rad dobio prosječno 1,9 citata, a prosječan broj citata za sve objavljene radove jest 0,6. Usporedimo li ove brojeve s rezultatima istraživanja iz 2007. godine (4) vidimo da je od ukupno objavljena 1273 rada citirano njih 185. Dakle, analiza iz 2007. godine pokazuje da je citirano 14,5 % radova, a 2016. godine postotak radova koji su citirani porastao je na 29,5. Prosječan broj citata za citirane radove porastao s 1,4 na 1,9, a prosječan broj citata za sve objavljene radove porastao je s 0,2 na 0,6. Zabilježena povećanja nisu zanemariva zato što su nastala tijekom posljednjih deset godina izlaza časopisa.

## Citirani radovi

*Analiza broja citata po radu:* iz tablice 1. jasno je da se raspon broja citata kreće od 1 do 20 po radu. Po jedan citat zabilježen je za 286 radova (60 %), a najviše, odnosno dvadeset citata dobio je jedan rad. Istraživanje iz 2007. godine pokazalo je da je 75,1 % citiranih radova dobilo po 1 citat, a najveći broj citata po radu bio je 5. Uočljiv je pad udjela radova s jednim zabilježenim citatom sa 75,1 % na 60 %, te povećanje maksimalnog broja citata koje je neki rad dobio s 5 na 20 citata.

*Analiza broja citata po godinama:* pokazuje da ni jedan citat nije zabilježen za radove objavljene 1976. i 1980. godine, a najviše – 63 citata dobili su radovi iz 1991. Usporedimo li te podatke s istraživanjem iz 2007., vidimo da su u međuvremenu neki radovi iz 1969. i 1977. citirani te je broj godina s nula citata smanjen s 4 na 2 godine. U istom razdoblju najveći broj citata po godini porastao je s 28 na 63 citata za radove iz 1991. godine.

from 33 European countries cited ASCRO in 709 papers, followed by citations by authors from 19 Asian countries in 185 papers, the authors from 10 US states in 134 papers, the authors from 9 African countries in 21 papers, and authors from 2 states in Australia and Oceania in 18 papers. Table 4 provides comparative data from previous (4) and current research on the number of countries classified by continents on which the authors of the citing papers live.

## Discussion

The study has shown that a total of 1,618 papers were published in ASCRO from 1966 to 2016. Out of the total number of papers, 477 (29.5%) were cited, with a total of 903 citations. Based on this, it was found that each cited paper received an average rate of 1.9 citations, while the average number of citations for all published papers was 0.6. If we compare these results with the results of the 2007 survey (4), we can see that 185 papers were cited out of a total of 1,273 published papers. Thus, the 2007 survey shows that 14.5% of papers are cited, and in 2016 the percentage of cited papers has increased to 29.5. The average number of citations for the cited papers rose from 1.4 to 1.9, while the average number of citations for all published papers increased from 0.2 to 0.6. The recorded increases are not negligible since they have been created over the last ten years in which ASCRO journal has been coming out.

## Cited papers

Analysis of the number of citations per paper: We can see from Table 1 that the range of citations is from 1 to 20 citations per paper. One citation was recorded for 286 papers (60%), while one paper received 20 citations, which is the largest number of citations. The 2007 survey showed that 75.1% of the cited papers received 1 citation, while the largest number of citations per paper was 5. There was a noticeable drop from 75.1% to 60% in the share of papers with one recorded citation as well as an increase from 5 to 20 citations in the maximum number of citations that some paper received.

Analysis of number of citations by years: It shows that no citations were recorded for the papers published in 1976 and 1980, and the papers from 1991 obtained the largest number of citations (63). Comparing these data with the 2007 survey we can see that in the meantime some papers from 1969 and 1977 have been cited and the number of years with zero



*Analiza citata prema starosti:* raspon starosti citiranih članaka kreće se od 0 do 45 godina. U nultoj godini, tj. godini objavljivanja rada citirana su 23 rada. Najviše, tj. 96 citata dobili su radovi stari tri godine, a zatim slijede oni stari šest godina sa 79 citata. Broj citata starijih radova postupno opada do 16 godina starosti, a radovi stariji od 16 godina rijetko su citirani. Usporedba s podacima iz prethodnog istraživanja pokazuje da je broj citata u nultoj godini porastao s 8 na 23, a najveći broj citata, u oba istraživanja, dobili su tri godine stari radovi s porastom od 24 na 96 citata. Godine 2007. najstariji citat bio je iz 34 godine staroga rada, a 2016. iz 45 godina staroga rada. Vjerujemo da je izdavanje online inačice časopisa od 2006. godine i digitalizacija časopisa od prvog broja (završena 2014. godine) maksimalno povećala vidljivost i dostupnost svih objavljenih članaka. To je moglo utjecati na citiranje vrlo starih radova koji su prije toga bili teško dostupni svjetskoj znanstvenoj zajednici.

### Citirajući radovi

#### Analiza časopisa citirajućih radova

Radovi objavljeni u ASCRO-u citirani su ukupno u 302 časopisa. Najviše, odnosno 168 citata (19 %), zabilježeno je u časopisu *Collegium antropologicum*. U sljedećem časopisu vidi se pad na 33 citata i nastavlja se do jednog citata zabilježenog u 174 različita časopisa.

Usporedba tih rezultata s onima iz ranijeg istraživanja pokazuje da je broj časopisa u kojima je ASCRO citiran porastao sa 65 na 302. U oba istraživanja najveći broj citata zabilježen je u časopisu *Collegium antropologicum*, no njihov udio u ukupnom broju citata pao je s 44,7 % na 19 %. To se može smatrati pozitivnim pomakom kao i značajno povećanje broja časopisa u kojima je citiran ASCRO jer upućuje na pravu internacionalizaciju ASCRO-a.

#### Analiza suautorstva citirajućih radova

Od ukupno 903 citata u 41 % radova ASCRO su citirali samo hrvatski autori, u 3,7 % radova citirali su hrvatski i strani autori, a u 55,3 % radova citirali su samo strani autori. Usporedbom tih rezultata s onima iz ranijeg istraživanja, vidimo da je udio citata samo hrvatskih autora pao sa 76,3 % na 41 %, a udio citata samo stranih autora povećao se s 21 % na 55,3 %. To također ističe pozitivan trend internacionalizacije ASCRO-a. Udio suautorskih citata hrvatskih i stranih autora neznatno je porastao s 2,7 % na 3,7 %. Intenziviranje suradnje domaćih sa stranim znanstvenicima moglo bi rezultirati novim istraživačkim idejama.

citations has been reduced from 4 to 2 years. Over the same period, the maximum number of citations per year increased from 28 to 63 citations for the papers from 1991.

Analysis of citations by age: The age range of the cited papers is from 0 to 45 years. In the 0 year of publication of the paper, 23 papers were cited. The papers that are three years old received the largest number of citations (96). They are followed by the papers which are six years old with 79 citations. The number of citations of older papers is gradually falling to sixteen, and the papers which are older than sixteen years are rarely cited. A comparison with the data from the previous survey shows that the number of citations in the year has risen from 8 to 23. Three years old papers received the maximum number of citations in both surveys, with an increase from 24 to 96 citations.

In 2007, the oldest cited paper was 34 years of old, and in 2016, the oldest cited paper was 45 years old. We believe that publishing the online version of the journal since 2006 and digitizing the journal from the first issue (completed in 2014) has maximized the visibility and availability of all published articles. This could have influenced the citation of very old papers that were hardly available to the world scientific community in the past.

### Citing papers

#### Analysis of journals with citing papers

The papers published in ASCRO were cited in a total of 302 journals. The largest number of citations that is 168, citations (19%) was recorded in *Collegium Antropologicum*. The journal shows a drop in 33 citations and continues to 1 citation recorded in 174 different journals.

A comparison of these results with the results of previous studies shows that the number of journals in which the ASCRO journal was cited has risen from 65 to 302. In both studies, the largest number of citations was recorded in *Collegium Antropologicum*, but their share in the total number of citations dropped from 44.7% to 19%. This can be considered a positive shift as well as a significant increase in the number of journals in which ASCRO was cited as it points to the true internationalization of the journal.

#### Analysis of the co-authorship of citing papers

Out of a total of 903 citations, ASCRO was cited only by Croatian authors in 41% of papers. ASCRO was cited by Croatian and international authors in 3.7% of papers, while ASCRO was cited only by international authors in 55.3% of papers. If we compare these results with the results of previous research we can see that the share of citations by only Croatian authors fell from 76.3% to 41%, while the share of citations by international authors increased from 21% to 55.3%. This also points to the positive trend towards the internalization of ASCRO. The share of co-authorship citations by Croatian and international authors has increased slightly from 2.7% to 3.7%. An intensification of co-operation between domestic and foreign scientists could result in new research ideas.

### Analiza država autora

Radove objavljene u ASCRO-u citirali su autori iz 73 države. Kao što se moglo i očekivati, najviše su ASCRO citirali autori iz Hrvatske (411 radova), a po jedanput citirali su ga autori iz 16 država. Razdioba država po kontinentima pokazala je značajno povećanje broja država za sve kontinente, osim Australije i Oceanije (tablica 4.).

Usporedimo li ove podatke s rezultatima ranijeg istraživanja, vidimo da je broj država iz kojih su autori citirajućih radova porastao s 29 na 73. Dakle, u posljednjih deset godina prvi put su zabilježeni citati iz ASCRO-a u tekstovima istraživača iz 44 države. U oba istraživanja radove objavljene u ASCRO-u najviše su citirali znanstvenici iz europskih država, a broj je povećan s 29 na 33 države. Zatim slijedi povećanje broja citata istraživača iz azijskih država sa 7 na 19, iz američkih država povećanje je s 4 na 10 država, a iz afričkih s 1 na 9. Nepromijenjen je ostao broj od 2 države iz Australije i Oceanije.

ASCRO je vidljiv i dostupan i u najudaljenijem kutku našeg planeta, što navedeni brojevi i potvrđuju. Vjerujemo da, bez slobodnog pristupa cjelovitom tekstu radova, znatan dio potencijalnih čitatelja uopće ne bi imao mogućnost pročitati članke objavljene u ASCRO-u.

### Zaključci

Istraživanje je pokazalo pozitivne promjene u svim analiziranim parametrima u posljednjih deset godina. To ohrabruje, no rad na podizanju kvalitete časopisa trajan je zadatak koji se može postići samo objavljivanjem kvalitetnih radova.

Uključivanje u svjetske indeksne baze povećalo je vidljivost ASCRO-a. To je ujedno i posredna potvrda kvalitete jer je časopis morao proći postupak procjene kvalitete za svaku bazu.

Želimo li izdvojiti promjene koje su znatno utjecale na pozitivne pokazatelje, bile bi to tri odluke uredništva – objavljivanje online inačice časopisa, digitalizacija cijele zbirke od prve godine izlaza i odluka da cjeloviti tekstovi budu potpuno besplatno dostupni svim potencijalnim čitateljima.

Na budućnost ASCRO-a velik će utjecaj imati odluka uredništva iz 2015. godine o provjeri izvornosti primljenih radova (Similarity Check) koja se obavlja s pomoću programa iThenticate. Program olakšava prepoznavanje rukopisa koji sadržavaju plagirane podatke. Dosljedno izdvajanje i odbijanje takvih rukopisa podignut će standard za prihvatanje rukopisa te je realno očekivati daljnji napredak časopisa.

### Sukob interesa

Nije bilo sukoba interesa.

### Analysis of authors by countries

The papers published in ASCRO were cited by authors from 73 countries. As can be expected, ASCRO was most cited by authors from Croatia (411 papers), while ASCRO was cited only once by authors from 16 countries. The division of countries by continents has shown a significant increase in the number of states for all continents except Australia and Oceania (Table 4).

If we compare this data with the results of previous research, we can see that the number of countries from which the authors of citing papers have risen from has increased from 29 to 73. Thus, in the last ten years, for the first time, ASCRO has been cited by researchers from 44 countries.

In both research, papers published in ASCRO are most cited by scientists from European countries, and the number of the countries has increased from 29 to 33. It is followed by an increase in the number of researchers from Asian countries from 7 to 19. The number of researchers from US states has increased from 4 to 10 countries, whereas from African countries an increase is from 1 to 9. The unchanged number of authors has remained in 2 states in Australia and Oceania.

ASCRO is visible and accessible in the farthest corner of our planet, as the above mentioned numbers confirm. We believe that without the full access to full texts, a good deal of potential readers would not have the opportunity to read the articles published in ASCRO.

### Conclusions

Our research has pointed to positive changes that have been occurring in all analyzed parameters over the last ten years. This is encouraging, but efforts on raising the quality of the journal need to be made in order to further improve the quality of the journal. This task can be accomplished only by publishing quality papers.

The visibility of ASCRO has been increased by inclusion of the journal in the world index base. This is also an indirect quality assurance because the journal had to undergo a quality assessment process for each individual base.

If we want to sort out the changes that have had a significant impact on the positive indicators, these would be the three Editorial decisions: publishing the online version of the magazine, digitizing the whole collection from the first year of publishing and making the full texts completely free to all potential readers.

In 2015, the Editorial decision was made on the Similarity Check, which was carried out using the iThenticate program. This decision will have a major impact on the future of ASCRO. This program facilitates the recognition of manuscripts that contain plagiarized data. A consistent appropriation and rejection of such manuscripts will raise the standard for accepting the manuscript. This opens the door to further progress in dynamics of the journal.

### Conflict of interest

None declared

**Abstract**

Acta Stomatologica Croatica (ASCRO) citation analysis was made on the occasion of fifty years of publishing the journal (1966 to 2016). The aim of the study was to determine the impact of the changes that have been occurring over the last ten years on the visibility and citation of ASCRO by comparing the obtained results with the 2008 ASCRO citation analysis. **Materials and Methods:** The sample was obtained by searching the Web of Science Core Collection database, and the data were processed by descriptive statistics. **Results:** A total of 1,618 papers were published in ASCRO in which 477 papers were cited in 903 citations. Each published paper was cited on average 0.6 times, while each of the cited papers received 1.9 quotations on average. The largest number of citations per paper is 20, and the largest number of citations per year is 63 in 1991. According to age, 96 papers received the largest number of citations three years after they had been published, and the oldest cited papers are 45 years old. ASCRO was cited in 302 journals, and the largest number of citations (19%) was recorded in *Collegium Antropologicum*. Out of the total of 903 citations, 41% were made by Croatian authors. Croatian and foreign authors cited in 3.7% of papers, and in 55.3% of papers citations were made only by foreign authors. ASCRO is cited by authors from 73 countries, of which 33 are European, 19 are Asian, 10 American, 9 African and 2 authors come from Australia and Oceania. **Conclusion:** ASCRO's improvement in the quality has been recorded in all of the analyzed parameters over the past ten years with respect to the results obtained by citation analysis in 2008.

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