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EDITORIAL

Structure of the 2003 Impact Factor for *Croatian Medical Journal*

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According to the *Journal Citation Report* from the Institute for *Scientific Information* (ISI), the last year's (2003) impact factor (IF) of the *Croatian Medical Journal* (*CMJ*) was 0.943. To determine the factors that contributed to this significant increase in the IF, we analyzed the structure of citations to *CMJ* in the ISI's publications, *Science Citation Index* (SCI), and *Social Science Citation Index* (SSCI). Thematic issues generally acquired more citations than regular issues. Furthermore, citation number varied for different article types. The citations to the original scientific articles corresponded to the average number of citations for the current IF value, whereas reviews and especially case reports were cited less frequently, and negatively contributed to the IF of the journal. Only half of all articles published in two previous years were cited in 2003. The majority of these articles were cited once or twice, whereas only 15 articles received more than three citations. Journal self-citations are still an important contributor to the *CMJ*'s IF (39.6%). Their proportion may decrease in time, by further improving the visibility of the journal, and thus acquiring greater number of independent citations. In future, we can expect year-to-year variations in the journals IF. This trend may be positive on a long-term basis, but expectation of a value significantly higher than 1 is unrealistic. *CMJ* is small general medical journal whose quality-oriented editorial policy may in the long-term result in the increase in the IF.

Key words: *Croatia; journal article*

In 2003, the *Croatian Medical Journal* (*CMJ*) reached its highest impact factor (IF) in its 12-year history. With 198 cites to articles published in 2001 and 2002, according to the *Institute for Scientific Information* (ISI) databases, *Science Citation index* (SCI) and *Social Science Citation Index* (SSCI), it acquired an IF of 0.943. In the years before 2002, *CMJ*'s IF varied around 0.4 (1). In 2002, it increased to 0.710, which was followed by a further increase to the present value. The journal climbed from the 58th to the 45th place of the rank list in the ISI's category "Medicine, General, and Internal." For this editorial I analyzed the factors that contributed to the increase in the *CMJ*'s IF.

Contribution of Thematic Issues to *CMJ*'s Impact Factor

A possible cause of the increase in IF may be a high citation yield to a certain thematic issue. To test this, I analyzed the distribution of citations in the years included in the calculation of the IF (Table 1). Four issues acquired 67% of total citations in 2003, and three of them were thematic issues. The most cited issue was "Forensic Sciences" (issue 3, volume 42) which accounted for 35% of total *CMJ*'s citations. "Molecular Medicine" (issue 4, volume 42) and "Public Health" (issue 2, volume 43) thematic issues participated in *CMJ*'s IF with 10% each. *Student CMJ* is a section which contains articles written mostly by undergraduate students. It was introduced in 2001, and has been continually published in the first issue of each *CMJ* volume. In 2002, the issue with *Student CMJ* section (issue 1, volume 43) acquired the highest citation count in the whole volume and significantly contributed to the IF.

Contribution of Article Type to *CMJ*'s Impact Factor

It is often postulated that review articles are frequently cited, and may increase a journal's IF, whereas case reports are cited less frequently and publishing many of them may lower a journal's IF (2). To investigate the influence of the article type, I calculated the proportion of citations to the specific article type. To exclude the influence of the difference in the proportions of published article types, I calculated the relative IF by dividing the number of citations with the number of articles of the same type published in the two previous years (Table 2). Citations to the original articles in 2003 corresponded to the *CMJ*'s IF. Not only case reports, but also review articles were cited less frequently than the average article in the *CMJ* in

2003. Independent of the publication type, editorials and articles in the forum section were cited more frequently than articles published under other sections.

Table 1. Contribution of individual issues of the *CMJ* to its impact factor (IF) in the year 2003

Volume/ Issue No.	No. of citations	Proportion of citations in total IF	Issue
Year 2001:			
42/1	9	0.05	regular + Student CMJ
42/2	12	0.06	regular issue
42/3	65	0.35	Forensic Sciences
42/4	18	0.10	Molecular Medicine
42/5	9	0.05	regular issue
42/6	10	0.05	regular issue
Total	123	0.66	
Year 2002:			
43/1	23	0.12	regular + Student CMJ
43/2	19	0.10	Public Health
43/3	5	0.03	regular issue
43/4	14	0.07	regular issue
43/5	2	0.01	regular issue
43/6	1	0.01	regular issue
Total	64	0.34	
Both years	187	1.00	

Table 2. Number of citations according to the article type

Article type	No. (%) of citations	No. (%) of articles	Relative impact factor
Original articles	117 (62.6)	129 (61.4)	0.91
Reviews	22 (11.8)	35 (16.7)	0.63
Case reports	3 (1.6)	16 (7.6)	0.19
Editorial	22 (11.8)	17 (8.1)	1.29
Correspondence	5 (2.7)	0*	0.00
Forum	18 (9.5)	13 (6.2)	1.38

*Correspondence items are not included in the calculation of the IF, but the citations to them contribute to the total number of citations to the Journal.

Contribution of Individual Articles to the *CMJ*'s Impact Factor

The contribution of individual articles to the *CMJ*'s IF also varied greatly. In 2003, 97 articles published in the previous two years were cited, meaning that only a half of all published papers contributed to the *CMJ*'s IF. The majority of all cited articles (85%) were cited once or twice. Only 15 articles (15%) were cited three or more times (Table 3). The first 8 articles were published in the most cited issue – "Forensic Sciences," and these articles brought 50 out of 65 citations to the "Forensic Sciences" issue. Such contribution of this thematic issue to the *CMJ*'s IF may be explained by the articles from the authors who continually publish in their field. Significant proportions (about 60%) of citations to those articles were independent citations, limited to 9 journals in the ISI's category "Medicine, Legal". We may presume that such high citing rate is a consequence of a small number of journals in the field with high publishing dynamics.

Proportion of Self-citations

We previously analyzed self-citations and their influence on the overall *CMJ*'s IF (1). In 2003, journal's self-citations still contributed with 39.6% to the *CMJ*'s IF. Findings from the ISI-essay (3) indicate that there is no connection between IF and self-citing rate in high impact journals. Small journals, on the other hand, may have high percentage of self-citations as a result of smaller total citation number, rather than journal's tendency to cite itself. Significant proportion of self citations in *CMJ* therefore may be de-

Table 3. Articles from the 2001 and 2002 *CMJ* volumes cited 3 or more times in 2003

Article	No. of citations
Parson W, Niederstatter H, Kochl S, Steinlechner M, Berger B. When autosomal short tandem repeats fail: optimized primer and reaction design for Y-chromosome short tandem repeat analysis in forensic casework. *Croat Med J.* 2001;42:285-7.	8
Gill P. Application of low copy number DNA profiling. *Croat Med J.* 2001;42:229-32.	7
Prinz M, Sansone M. Y chromosome-specific short tandem repeats in forensic casework. *Croat Med J.* 2001;42:288-91.	7
Mandrekar MN, Erickson AM, Kopp K, Krenke BE, Mandrekar PV, Nelson R, Peterson K, Shultz J, Tereba A, Westphal N. Development of a human DNA quantitation system. *Croat Med J.* 2001;42:336-9.	6
Parsons TJ, Coble MD. Increasing the forensic discrimination of mitochondrial DNA testing through analysis of the entire mitochondrial DNA genome. *Croat Med J.* 2001;42:304-9.	5
Alonso A, Anđelinović Š, Martin P, Sutlović D, Erceg I, Huffine E, de Simon LF, Albarran C, Definis-Gojanović M, Fernandez-Rodriguez A, Garcia P, Drmić I, Režić B, Kuret S, Sancho M, Primorac D. DNA typing from skeletal remains: evaluation of multiplex and megaplex STR systems on DNA isolated from bone and teeth samples. *Croat Med J.* 2001;42:260-6.	5
Gabriel MN, Calloway CD, Reynolds RL, Anđelinović Š, Primorac D. Population variation of human mitochondrial DNA hypervariable regions I and II in 105 Croatian individuals demonstrated by immobilized sequence-specific oligonucleotide probe analysis. *Croat Med J.* 2001;42:328-35.	4
Henke J, Henke L, Chatthopadhyay P, Kayser M, Dulmer M, Cleef S, Poche H, Felske-Zech H. Application of Y-chromosomal STR haplotypes to forensic genetics. *Croat Med J.* 2001;42:292-7.	4
Huffine E, Crews J, Kennedy B, Bomberger K, Zinbo A. Mass identification of persons missing from the break-up of the former Yugoslavia: structure, function, and role of the International Commission on Missing Persons. *Croat Med J.* 2001;42:271-5.	4
Marušić A, Mišak A, Kljaković-Gašpić M, Marušić M. Educatione ad excelentiam – ten years of the *Croatian Medical Journal*. *Croat Med J.* 2002;43:1-7.	4
Marušić M, Marušić A. Good editorial practice: editors as educators. *Croat Med J.* 2001;42:113-20.	3
Ozcankaya R, Delibas N. Malondialdehyde, superoxide dismutase, melatonin, iron, copper, and zinc blood concentrations in patients with Alzheimer disease: cross-sectional study. *Croat Med J.* 2002;43:28-32.	3
Primorac D, Rowe DW, Mottes M, Barišić I, Antičević D, Mirandola S, Gomez Lira M, Kalajzić I, Kušec V, Glorieux FH. Osteogenesis imperfecta at the beginning of bone and joint decade. *Croat Med J.* 2001;42:392-415.	3
Tracey M. Short tandem repeat-based identification of individuals and parents. *Croat Med J.* 2001;42:233-8. Review.	3
Vodopivec I, Vujaklija A, Hrabak M, Lukić IK, Marušić A, Marušić M. Knowledge about and attitude towards science of first year medical students. *Croat Med J.* 2002;43:58-62.	3

creased only by increasing the proportion of independent citations, which could be accomplished by publishing high quality articles, recognized as important and cited elsewhere.

Future Expectations

The IF of small journals with low citation counts varies greatly from year to year (4), and conclusions about the general trend of the *CMJ*'s IF could be drawn only after a wider time span (ie 5 or more years). We may, however, conclude that since its beginning *CMJ* has greatly improved its visibility and doubled its IF during the last 10 years. However, it is unrealistic to expect from a small peripheral general medical journal to acquire the IF value that could get it even into the top 20 journals in its ISI category. Functioning of a journal from the "scientific periphery" is different from a prestigious, high impact journal. Small journals are read by its local communities, and their function is to inform as well as educate their readers and potential contributors (5). "IF-oriented" editorial policy in any small journal, including the *CMJ*, should not overachieve the quality standards in article selection and continuous education of potential contributors as the dominant characteristics of the journal.

References

1 Kovačić N, Mišak A. What can be learned from impact factor of Croatian Medical Journal, 1994-2003? Croat Med J. 2004;45:13-7.

2 Christopher MM. The impact factor: getting a grip. Vet Clin Pathol. 2003;32:98-100.

3 Journal self-citation in the Journal Citation Reports® – Science Edition (2002): a citation study from the Thomson Corporation. Available from: *http://www.isinet.com/essays/journalcitationreports/8236411/*. Accessed: November 15, 2004.

4 Benitez-Bribiesca L. The ups and downs of the impact factor: the case of *Archives of Medical Research*. Arch Med Res. 2002;33:91-4.

5 Marušić M, Mišak A, Kljaković-Gašpić M, Fišter K, Hren D, Marušić A. Producing a scientific journal in a small scientific community: an author-helpful policy. Int Microbiol. 2004;7:143-7.

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