

## SPECIAL ARTICLE

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# Importance of being indexed in important databases – effect on the quantity of published articles in JBUON

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## Summary

**Purpose:** To investigate the dynamics of indexing the Journal of the Balkan Union of Oncology (JBUON) in important biomedical databases, the effects on the quantity and type of published articles, and also the countries of the (co) authors of these papers.

**Methods:** The process of the JBUON indexing started with EMBASE/Excerpta Medica, followed in 2006 (PUBMED/MEDLINE) and continued every second year in other important biomedical databases, until 2012 when JBUON became Open Access Journal (for even more information please visit [www.jbuon.com](http://www.jbuon.com)). Including the next two years for monitoring the effect of the last indexing, we analyzed 9 volumes consisting of 36 issues that were published from January 2006 to December 2014, with regard to the number and category of articles, the contribution of authors from Balkan and non-Balkan countries, and the (co)authorship in the published articles.

**Results:** In the period 2006-2014, 1165 articles of different categories were published in J BUON. The indexing pro-

gress of JBUON immediately increased the submission rate, and enlarged the number of publications, original papers in particular, in every volume of JBUON. Authors from Balkan countries contributed in 80.7% of all articles. The average number of coauthors per original article grew slowly and was higher at the end of the investigated period than at the start (6.6 and 5.8, respectively).

**Conclusion:** The progressing covering of JBUON in important biomedical databases and its visibility on international level attracted the attention of a large readership, and submission rate and the number of published articles grew significantly, particularly the number of original papers. This is the most important consequence of the editorial policy which will hopefully lead to even more progress of JBUON in the near future.

**Key words:** biomedical databases, scientific journals, scientific papers

## Introduction

Since the foundation of the official journal of the Balkan Union of Oncology (JBUON) in 1995, its editors expressed their hopes and ambition to include JBUON in the most important biomedical indexing databases, such as PUBMED/MEDLINE and Science Citation Index (SCI) [1]. This goal was achieved afterwards JBUON was included in PUBMED/MEDLINE in 2006 and every second year it was indexed in another important biomedical database (SCIE in 2008; Impact Factor in 2010; Open Access Journal in 2012). Before the first

event (PUBMED/MEDLINE in 2006), a scientometric analysis [2] revealed that the majority of published articles were written by authors from Balkan countries, while authors from the rest of the world contributed in only 16.1% of the total number of articles.

We hypothesized that covering of this journal in important databases might attract more authors to submit their manuscripts, thus enlarging the readership and improving the quality of JBUON. We, therefore, analyzed all volumes of

this journal issued during the period from January 2006 to December 2014, including the effect following the last indexing event - Open Access Journal Publishing in 2012.

## Methods

Nine volumes (No. 11-19) of JBUON, each consisting of 4 issues (n=36), were analyzed regarding the number of published articles of several categories: original papers, review articles, case reports, letters to the editor, short communications with original results, special series and history of medicine. The number of authors per article of each category and their origin (Balkan and non-Balkan countries) was also analyzed.

### Statistics

The normality of continuous variables was evaluated using the Shapiro-Wilk test. Measures of descriptive statistics (frequency, percentage, mean, standard deviation (SD), median and range) were used according to the types of variables. The Kruskal-Wallis test, Wilcoxon rank sum test with continuity correction and Pearson chi-square test were used for comparison. Statistical significance level was set at  $p < 0.05$  and for multiple testing at the same dataset, the Bonferroni correction was used. Statistical analyses were done using program R (version 3.1.1 (2014-07-10) -- "Sock it to Me" Copyright (C) 2014; The R Foundation for Statistical Computing; Platform: i386-w64-mingw32/i386 (32-bit); downloaded: October 22, 2014).

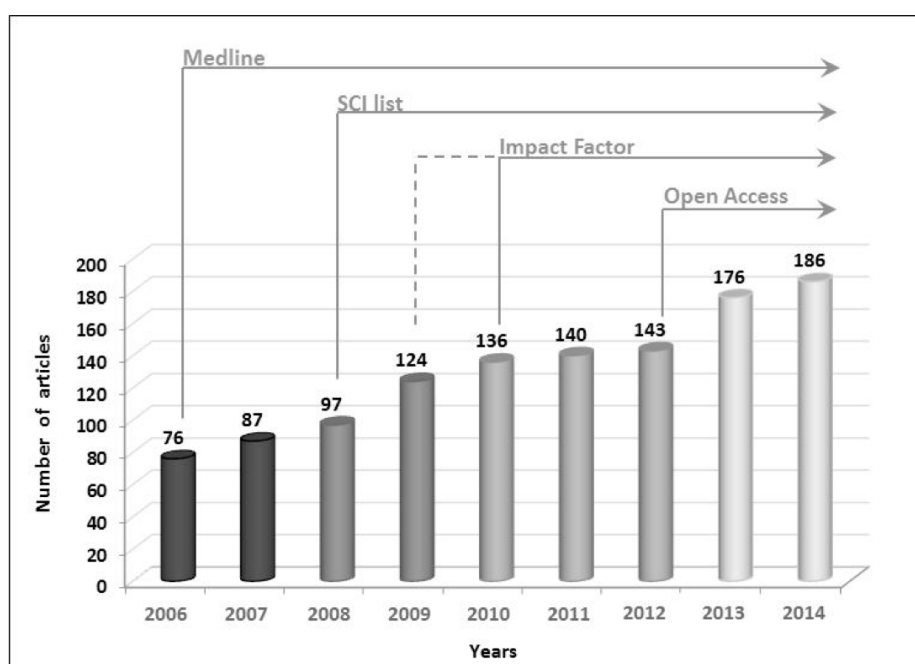
## Results

During the period of 9 years, 1165 articles were published in 9 volumes (36 issues) of JBUON. In each second year of this period, the journal succeeded to be covered in an additional important database, and the number of published articles in each volume heightened accordingly (Figure 1). In particular, the number of original papers was more than 3-fold higher at the end of the investigated period than at the start (Figure 2).

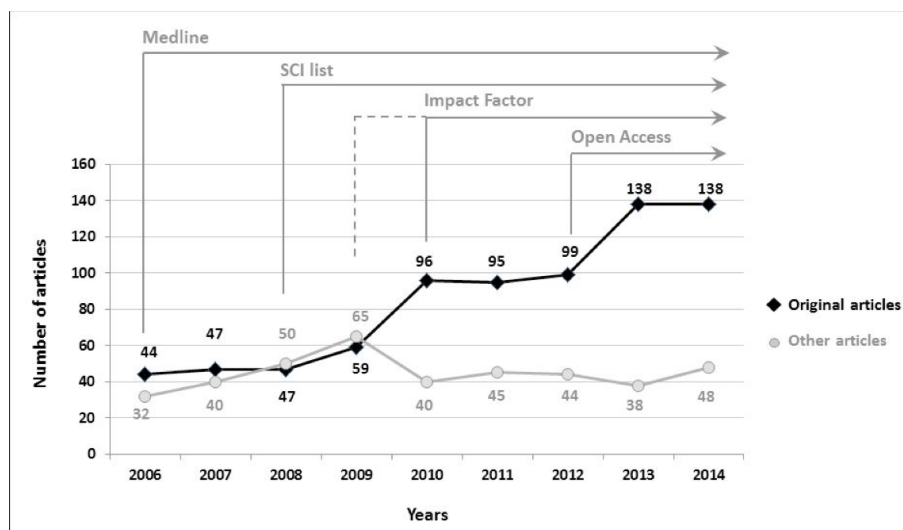
Similarly, the percentage of this category of papers, which was about 50% of all articles until the middle of the investigated period, has been constantly rising thereafter, achieving nearly three quarters of all articles (Table 1), which was statistically significant (Table 3). In comparison with baseline, the maximum (78.4%, Table 1) was achieved in 2013.

Out of a total of 1165 articles published during 2006-2014, 940 (80.69%) were authored by members of the Balkan Union of Oncology (BUON), 165 (14.16%) from countries other than Balkans, and 60 (5.15%) articles were written by authors from both Balkan and non-Balkan countries. The number of articles published during this period continued to grow up, especially for authors from non-Balkan countries (Figure 3).

Authors from a BUON country varied greatly regarding contributions in the journal: the lead-



**Figure 1.** Absolute number of articles published in nine volumes of JBUON.



**Figure 2.** Absolute number of original articles published in nine volumes of JBUON.

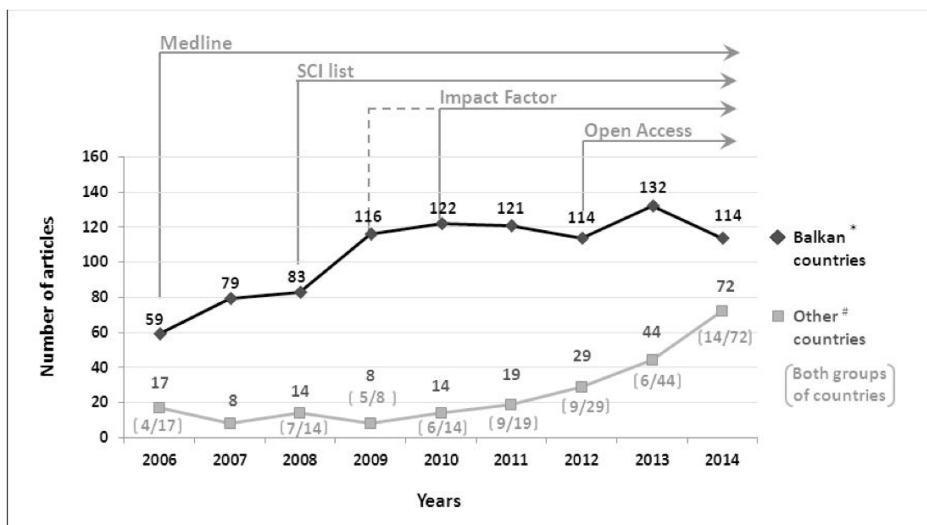
**Table 1.** Absolute number and percentage of articles published in nine volumes of JBUON

Articles	Year – N (%)									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Original	44(57.9)	47(54)	47(48.5)	59(47.6)	96(70.6)	95(67.9)	99(69.2)	138(78.4)	138(74.2)	
Review	5(6.6)	9(10.3)	15(15.5)	17(13.7)	14(10.3)	17(12.1)	15(10.5)	10(5.7)	20(10.8)	
Case report	16(21.1)	16(18.4)	25(25.8)	26(21)	8(5.9)	17(12.1)	10(7)	8(4.5)	15(8.1)	
Letter*	-	6(6.9)	-	6(4.8)	9(6.6)	4(2.9)	6(4.2)	11(6.3)	6(3.2)	
Special series	7(9.2)	5(5.7)	3(3.1)	3(2.4)	3(2.2)	2(1.4)	5(3.5)	4(2.3)	1(0.5)	
History <sup>#</sup>	4(5.3)	4(4.6)	4(4.1)	5(4)	4(2.9)	4(2.9)	4(2.8)	4(2.3)	4(2.2)	
Short comm. <sup>~</sup>	-	-	3(3.1)	8(6.5)	2(1.5)	1(0.7)	4(2.8)	1(0.6)	2(1.1)	
Total	76 (100)	87 (100)	97 (100)	124(100)	136(100)	140(100)	143(100)	176(100)	186 (100)	

\*Letter to the editor, <sup>#</sup>History of Oncology, <sup>~</sup>Short communication – only with original results

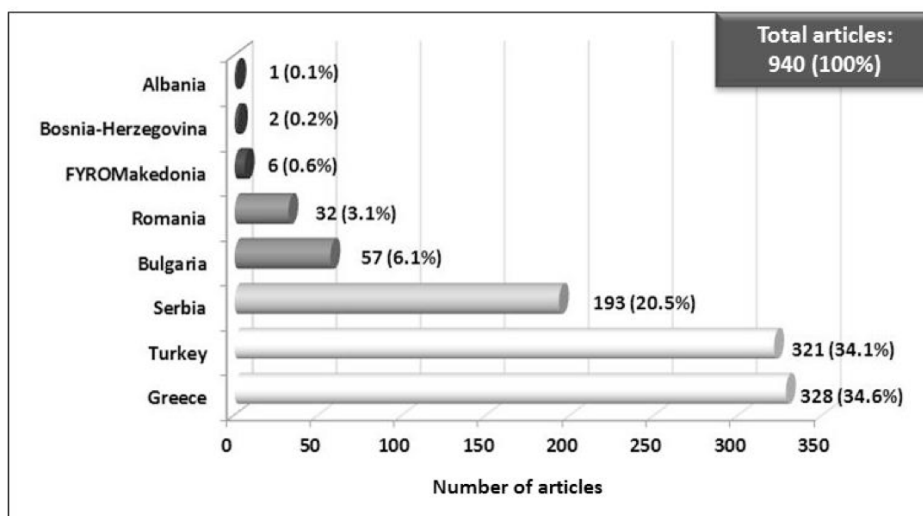
**Table 2.** Authors of articles published in J BUON during 2006-2014 (descriptive data)

Types of articles	Years									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	
<b>Original articles</b>										
No. of articles	44	47	47	59	96	95	99	138	138	
Mean (SD)	5.8 (2.9)	5.9 (2.9)	6.1 (3.2)	5.8 (2.7)	6.1 (2.9)	6.4 (2.7)	7.2 (3.2)	6.7 (3.2)	6.6 (2.8)	
Median (range)	6 (1-16)	6 (1-13)	5 (1-14)	6 (1-12)	6 (1-16)	6 (1-15)	7 (1-23)	6 (1-20)	7 (1-16)	
<b>Other articles</b>										
No. of articles	32	40	50	65	40	45	44	38	48	
Mean (SD)	4.2 (2.7)	4.1 (2.1)	4.3 (2.1)	5 (2.4)	4.2 (2)	4.6 (1.7)	5 (2.1)	4.5 (1.9)	5.3 (1.9)	
Median (range)	3 (1-11)	4 (1-10)	3.5 (1-10)	5 (1-12)	4 (1-10)	5 (1-9)	5 (1-10)	5 (1-9)	5 (1-10)	
<b>Total</b>										
No. of articles	76	87	97	124	136	140	143	176	186	
Mean (SD)	5.1 (2.9)	5.1 (2.7)	5.2 (2.8)	5.4 (2.6)	5.5 (2.8)	5.9 (2.6)	6.6 (3.1)	6.2 (3.1)	6.3 (2.7)	
Median (range)	4.5 (1-16)	5 (1-13)	5 (1-14)	5 (1-12)	5 (1-16)	5 (1-15)	6 (1-23)	6 (1-20)	6 (1-16)	



**Figure 3.** Absolute number of articles written by authors from Balkan countries, non-Balkan countries, and by authors from both groups of countries.

**\*Balkan countries:** Albania, Bosnia Herzegovina, Bulgaria, Greece, FYROMacedonia, Romania, Serbia, Turkey  
**#Other countries:** Armenia, Austria, Belgium, Brazil, China, Croatia, Czech Republic, Egypt, France, Germany, India, Iran, Ireland, Italy, Israel, Lithuania, Moldova, Poland, Russia, Slovenia, Spain, Taiwan, Ukraine, United Kingdom



**Figure 4.** Contribution of BUON countries in the total number of articles published in nine volumes of JBUON.

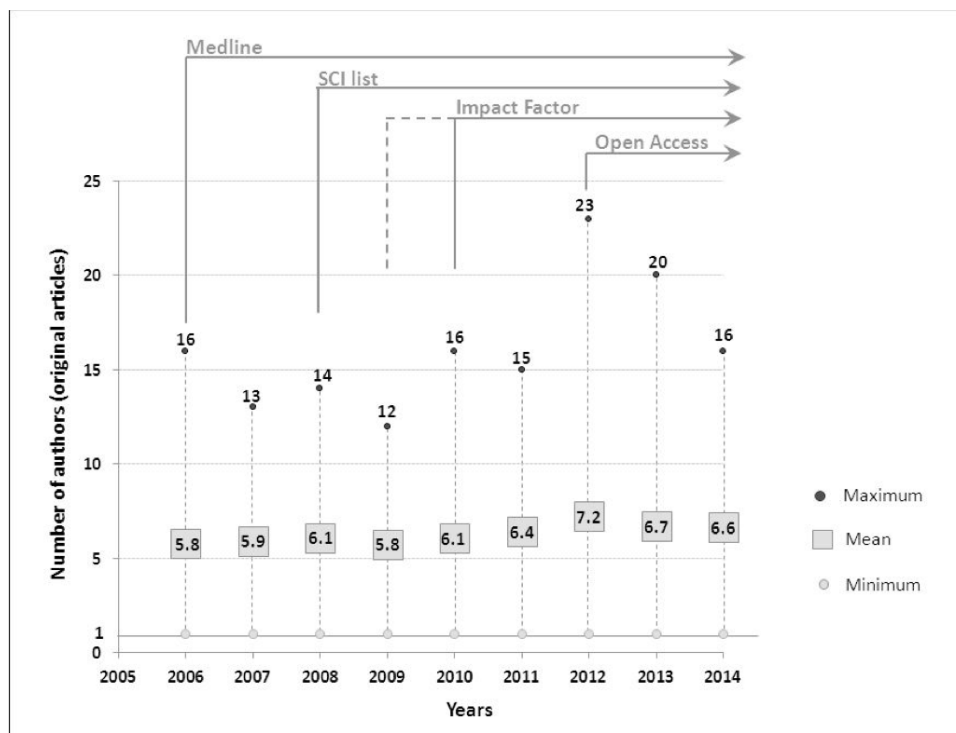
ing country was Greece, immediately followed by Turkey, and then by Serbia and Bulgaria. Other Balkan countries contributed to a much lesser extent (Figure 4).

With very rare exceptions, the great majority of papers were multiauthored (Table 2), especially for the original articles (Figure 5).

Along with coverage in important databases, the number of coauthors of the original articles and all articles have significantly increased (Table 3). From 2012 multiauthorship was statistically significantly higher in comparison with baseline for all articles (Table 3).

### Discussion

In the second decade of its existence, JBUON was gradually (every second year) covered by several important biomedical databases and became visible at an international level. Because writing and reading an indexed journal is so important for health practitioners [3], the readership of JBUON gradually grew up. Consequently, the manuscript submission rate has been rising constantly, and, due to the better quality of submitted manuscripts, so has the acceptance rate (now about



**Figure 5.** Multiauthorship of original articles published in JBUON during 2006-2014 (descriptive data).

**Table 3.** Results of general (whole period) and pairs (according to baseline) testing for the number of articles and number of authors of articles published in JBUON during 2006-2014

Comparison	Number of articles	Number of authors	All articles
	Original vs other	Original articles	
Whole period	Pearson chi-square test	Kruskal Wallis test	Kruskal Wallis test
2006-2014	p<0.05	p<0.05	p<0.05
According to baseline	Pearson chi-square test	Wilcoxon rank sum <sup>£</sup>	Wilcoxon rank sum <sup>£</sup>
2006 vs 2007	ns*	ns*	ns*
2006 vs 2008	ns*	ns*	ns*
2006 vs 2009	ns*	ns*	ns*
2006 vs 2010	ns*	ns*	ns*
2006 vs 2011	ns*	ns*	ns*
2006 vs 2012	ns*	p#<0.00625	p#<0.00625
2006 vs 2013	p#<0.00625	ns*	p#<0.00625
2006 vs 2014	ns*	ns*	p#<0.00625

<sup>£</sup>Wilcoxon rank sum test with continuity correction, ns\*: not significant according to #Bonferroni correction (0.05/7=0.00625)

40%, Athanassiou AE, personal communication). As the number of published articles has increased each year, the JBUON editorial board decided that, starting from 2015, this journal will appear in six issues per volume [4].

Although JBUON is the official journal of BUON, a constantly growing number of authors

from European countries other than the Balkans published their papers in JBUON. Moreover, some authors were from distant continents, such as Asia (China, India, Taiwan), North America (USA), South America (Brazil) and Africa (Egypt). This fact shows that the journal is now a truly international periodical.

The number of papers published in JBUON during the years 2006-2014 has also been growing. This is particularly evident for original papers: by the end of the period, it was 3-fold higher than at the start, which is important because original papers are the core of any scientific publication.

Along with the ever increasing number of published papers, the number of coauthors per original article has also increased. It was significantly higher in this period than that reported earlier when the mean number of coauthors per original paper was 4.7 [5]. This increasing trend was noted in the last century [6,7] and has been maintained to this day worldwide [8-10]. Since modern science is a complex multidisciplinary and multiprofessional enterprise, usually executed by large teams, it is understandable that the byline is also long.

In conclusion, the progressive coverage of JBUON by important biomedical databases and its visibility at an international level has at-

tracted the attention of a large readership, following which, the submission rate increased. A significant rise in the number of original papers, which now dominate each issue, is the most important consequence of the editorial policy. Dedicated work of editors and reviewers, and the good quality of published papers, are creditable for such an accomplishment, and will hopefully lead to even greater progress of JBUON in the near future.

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