

# Awareness, Attitudes, and Perceptions of Croatian-Based Orthopedic and Trauma Surgeons toward Scientific Manuscripts, Publishing Internationally and Medical Writing. Results of an Online Questionnaire

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## ABSTRACT

*The objective of this survey was to identify the importance placed by Croatian-based surgeons on writing scientific manuscripts and publishing them internationally, as well as their awareness of and attitudes toward medical writing. A link to an online survey was sent to 327 Croatian-based orthopedic and trauma surgeons. The electronic questionnaire consisted of rating scales, multiple choice questions and free text reply boxes. A total of 61 surgeons based in Croatia replied to the survey, yielding a response rate of 19% (61/327). The survey results indicate that surgeons in Croatia are active in both research and the writing of manuscripts. There is also a high level of interest among them to publish internationally in English to further their careers. While 68% (38/56) of respondents initially claimed to know about medical writing, further questioning on the subject revealed a reduced level of familiarity with the concept. Only 19% (11/58) of respondents had ever engaged the services of a medical writer and they were generally satisfied with the work done across the three areas of language, editing and scientific knowledge. Medical writers are advised to increase awareness of their services among Croatian-based orthopedic and trauma surgeons who may well have a need for their expertise.*

**Key words:** publications, Croatia, attitude, data collection, writing, surgeons, awareness, perception, manuscripts, medical writing

## Introduction

Croatia has well-developed training programs in orthopedics concentrated in 15 educational centers. Nationally, there are some 4.2 orthopedic surgeons *per* 100,000 inhabitants in Croatia<sup>1</sup>. By way of contrast, in 2009 there were 7.8 orthopedic surgeons *per* 100,000 inhabitants in the United States<sup>2</sup>.

The objective of this survey was to gauge the importance of writing scientific manuscripts for surgeons in Croatia, as well as measuring their awareness of and attitudes toward medical writing. Given that Croatian is the

everyday language spoken in Croatia and the need to publish internationally in English, information on the surgeons' language skills was also collected to supplement the data on medical writing. The issues faced by Croatian scientists who are increasingly required to publish internationally in a second language have been the subject of previous studies<sup>3,4</sup>.

It has also been noted that given the preeminence of English »as the international language of research and publication, there is a need to empirically investigate the

**TABLE 1**  
SELF-RATED LANGUAGE ABILITIES OF CROATIAN-BASED ORTHOPEDIC AND TRAUMA SURGEONS

	Mother tongue	Very good	Good	Average	Poor	Response rate
Croatian	91% (52)	7% (4)	2% (1)	0	0	93% (57/61)
English	0	62% (36)	33% (19)	5% (3)	0	95% (58/61)
German	0	6% (3)	16% (9)	16% (9)	62% (34)	90% (55/61)

question of international scholarly publication in English on the part of non-native speakers of English<sup>5</sup>.

In addition, other research suggests that English-language articles by Croatians have only »small visibility, usage and impact outside Croatia« which may impact upon Croatian surgeons' motivation to write in English<sup>4</sup>.

The idea for this study came from the authors' personal experiences at medical conferences and courses held in Croatia but conducted in English.

## Materials and Methods

A link ([www.surveymonkey.com/s/Croatian\\_surgeons](http://www.surveymonkey.com/s/Croatian_surgeons)) to a simple online survey was sent to 327 orthopedic and trauma surgeons in Croatia in January 2011. The surgeons were drawn from the 806 entries in the Croatian Surgery Society database and the Croatian Orthopaedic and Trauma Surgery database which the authors had access to. Being listed as a trauma or orthopedic surgeon was the only criteria used to contact people. The online survey was composed completely in English and the note accompanying the invitation to participate was in Croatian. Respondents who completed the survey answered a total of 5 out of 6 questions (due to redirection at one stage based upon a specific answer given, it was impossible for a respondent to answer all 6 questions). The number of questions was deliberately kept low to improve response rates. The questionnaire consisted of 5 point Likert scales to rate attitudes and levels of statement agreement, as well as multiple choice questions and free text reply boxes.

## Results

A total of 61 surgeons based in Croatia began the survey, yielding a response rate of 19% (61/327). Partial answers were received from 8% (5) of surgeons, meaning that 56 respondents (92%) completed the survey in its entirety. All answers received were included in the final analysis of each individual question. The collected responses are grouped into the following categories:

### Language skills

The respondents were asked to self-rate their language skills in Croatian, English and German along a scale ranging from mother tongue to poor and the results are summarized in Table 1. At 91%, the majority of respondents were Croatian speakers (52), and there were no native English speakers.

### Other language skills

An option to record knowledge of a different language (but not explicitly the level) was given and 20 respondents provided additional linguistic information. The other language which was the most spoken was Italian which 11 respondents claimed some knowledge of. One additional respondent was a native Italian speaker. The other languages which respondents claimed to be familiar with to some degree (some of who by the process of elimination must be native speakers), were French (4), Slovenian (3), Spanish (3), Russian (2), as well as Hungarian, Bosnian and Turkish (1 each).

### Publications

#### Importance and amount

92% (54/59) of respondents strongly agreed or agreed with the statement that »It is important for my career that I write publications«. At 96% (55/57), a slightly higher number again expressed a personal interest in conducting clinical research and publishing the results. This interest in research and publication is reflected in Table 2 which lists the number of scientific manuscripts for publication that the respondents worked on in the preceding 2 years. The question was deliberately left ambiguous as to whether the manuscripts had been successfully published due to the length of the publication acceptance process in scientific journals. A total of 74% (43/58) of the surgeons based in Croatia had worked on 2 or more manuscripts within this time frame.

### English as the lingua franca for researchers

Having established their interest and output in publishing, the respondents were asked to rate their level of agreement with the following statement: »Having to publish internationally in English is a barrier for me«. At 65% (37/57), the majority (17/57 »disagree« and 20/57

**TABLE 2**  
NUMBER OF SCIENTIFIC MANUSCRIPTS THAT THE RESPONDENTS HAD WORKED ON IN THE PRECEDING 2 YEARS

	Response rate	Number of respondents
None	17.2%	10
1	8.6%	5
2	24.1%	14
3	24.1%	14
4+	25.9%	15
Total	100%	58

»strongly disagree«) did not support this statement. However, 19% (11/57) of respondents (1/57 »strongly agree« and 10/57 »agree«) did concur with the statement.

#### Authorship

The respondents were asked about their knowledge of authorship guidelines (e.g. ICMJE uniform requirements, EMWA guidelines). At 54%, (31/57), a slight majority indicated that they were aware of guidelines. Exactly one-third (19/57) neither agreed nor disagreed with the statement that they are aware of authorship guidelines, and only 12% (7/57) allowed that they were unaware of existing guidelines.

#### Medical writing

Respondents were asked to rate their level of agreement with the following statement: »I do not know much about medical writing«. 68% (38/56) disagreed with this (18/56 »strongly disagree« and 20/56 »disagree«) while 16% (9/56) agreed with the statement (1/56 »strongly agree« and 8/56 »agree«). The same number again, 16% (9/56), neither agreed nor disagreed.

When asked if they had ever used the services of a medical writer, 19% (11/58) answered yes, 81% (47/58) answered no. Based upon their answer to this question, respondents were redirected to the appropriate page.

#### Those with personal experience of medical writers

The eleven respondents who had engaged medical writers' services were asked to rate their levels of satisfaction with medical writers' work across the three areas of language, editing and scientific knowledge. The category »satisfied« was the most popular for each of these three areas, indicating that the majority of respondents were happy with the experience (language: 86% (6/7), editing: 63% (5/8), scientific knowledge 88% (7/8)). No respondent was »very satisfied« or »very unsatisfied« in any area, and only one entry for »unsatisfied« was received – in the category of scientific knowledge.

#### Those with no personal experience of medical writers

Respondents who had no personal experience with the services provided by medical writers were given the option of indicating why they have not as yet availed of such services. Multiple answers were possible. The most popular answer at 61% (28/46) was unfamiliarity with the concept. Not knowing any medical writers was next at 37% (17/46), followed by a lack of need at 17% (8/46). 4% (2/46) of respondents chose high costs as the reason why they have not used medical writers. Although the option to input their own ideas was given, no additional reasons were provided by any of the respondents.

#### Discussion

The survey results indicate that Croatian-based orthopedic and trauma surgeons are active in both re-

search and the writing of scientific manuscripts and that there is a high level of interest among them to publish internationally in English. Initiatives have been undertaken in Croatia to improve the international visibility of Croatian scientific publications<sup>3,4</sup>. However, a little under 20% of the respondents (10/58) had not worked on a manuscript in the preceding two years and a similar number (11/57) did view publishing in English as a barrier. This suggests that a small but significant proportion of Croatian surgeons are unlikely to publish internationally.

In common with findings from other countries, knowledge of authorship criteria was patchy<sup>6</sup>. However, previous research has shown that Croatian medical professionals have an intuitive knowledge of ICMJE authorship criteria<sup>7</sup>.

The topic of medical writing revealed some interesting results. While early in the survey only 16% (9/56) of the respondents said they did not know about medical writing, by the end of the short questionnaire 61% (28/46) of respondents who had never used a medical writer said they were unfamiliar with the concept. This is a clear contradiction of previously claimed knowledge on the subject of medical writing.

Given the lack of knowledge of what medical writers do and Croatian-based surgeons stated desire to publish internationally, it does appear that the market for medical writers in Croatia is relatively untapped. At the time of writing, the resources section on the Website of the European Medical Writers Association does not list any freelance medical writers or medical writing companies based in Croatia<sup>8</sup>. The potential for medical writing can also be seen in the fact that in this survey, Croatian-based surgeons with personal experience of medical writers were generally satisfied with the results.

We recognize that there were drawbacks to the survey design such as the self-rating of language skills and the ability of respondents to skip over questions. However, although there are many articles relating to authorship available, we could find none in the literature which addressed surgeons' attitudes toward medical writing. This survey serves as a first step in investigating this growing area of interest.

#### Conclusions

There is a recognized need and desire among Croatian-based orthopedic and trauma surgeons to conduct research and publish their results. However, there is little familiarity with the concept of medical writing or personal experience of the services provided by medical writers. Medical writing professionals are advised to more widely publicize their services (along with general information on the concept of medical writing) among Croatian-based orthopedic and trauma surgeons who may well have a need for their expertise.

## REFERENCES

1. HAŠPL M. (PowerPoint presentation). Croatia National Presentation. UEMS Specialist Section of Orthopaedics and Traumatology. Accessed 27.1.2012. Available from: URL: [http://www.uems-ortho.org/data-presentations/Croatia\\_National\\_Presentation.ppt](http://www.uems-ortho.org/data-presentations/Croatia_National_Presentation.ppt) — 2. AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS (AAOS). Surgeon Density per 100,000 US Population from Orthopaedic Practice in the U.S. 2009. Accessed 27.1.2012. Available from: URL: <http://www.aaos.org/research/stats/density.pdf> — 3. STOJANOVSKI J, PETRAK J, MACAN, B. Learn Publ, 22 (2009) 263. DOI: 10.1087/20090402. — 4. HEBRANG GRGIĆ I. Open Access to Scientific Information in Croatia: Increasing Research Impact of a Scientifically Peripheral Country (Lambert Academic Publishing, Saarbrücken, 2011). — 5. FLOWERDEW J, Journal of Second Language Writing, 8 (1999) 123. DOI: 10.1016/S1060-3743(99)80125-8. — 6. PIGNATELLI B, MAISONNEUVE H, CHAPUIS F. J Med Ethics, 10 (2005) 578. DOI: 10.1136/jme.2004.009449. — 7. HREN D, SAMBUNJAK D, IVANIS A, MARUSIĆ M, MARUSIĆ A. J Med Ethics, 7 (2007) 428. DOI: 10.1136/jme.2006.017160. — 8. EUROPEAN MEDICAL WRITERS ASSOCIATION (EMWA). Resources section of the EMWA Website. Accessed 27.1.2012. Available from: URL: <http://www.emwa.org>.

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## **SVIJEST, STAVOVI I PERCEPCIJE ORTOPEDA I TRAUMATOLOGA U REPUBLICI HRVATSKOJ PREMA ZNANSTVENIM ČASOPISIMA, OBJAVLJIVANJU RADOVA NA MEĐUNARODNOJ RAZINI I MEDICINSKOM PISANJU. REZULTATI ON-LINE ANKETE**

### **SAŽETAK**

Cilj ovog istraživanja bio je utvrđivanje važnosti koju hrvatski ortopedi i traumatolozi pridaju pisanju znanstvenih radova i njihovom objavljivanju u međunarodnim časopisima, kao i utvrđivanje njihovih saznanja i stavova prema pisanju znanstvenih medicinskih radova. Poveznica na »online anketu« je bila poslana 327-moricima hrvatskih ortopeda i traumatologa. Elektronski upitnik se sastojao od ocjenskih ljestvica, pitanja sa više mogućih odgovora i odgovora sa pisanjem slobodnog teksta. Ukupno 61 kirurg sa sjedištem u Hrvatskoj je odgovorio na anketu, što daje postotak odgovora od 19% (61/327). Rezultati istraživanja pokazuju da su hrvatski ortopedi i traumatolozi aktivni kako u istraživanjima tako i u pisanju znanstvenih radova. Također među njima postoji i veliko zanimanje za objavljivanje u međunarodnim časopisima na engleskom jeziku radi razvoja njihovih karijera. Dok je 68% (38/56) ispitanika u početku je tvrdilo da je upoznato s pisanjem znanstvenih medicinskih radova, dodatno ispitivanje na tu temu otkrilo je smanjenu razinu poznavanja samog koncepta. Samo 19% (11/58) ispitanika nikada nije koristilo usluge profesionalnog pisca znanstvenih medicinskih radova (»medical writer-a«) te su općenito bili zadovoljni svojim radom na tri polja: vladanje jezikom, uređivanjem i znanstvenim spoznajama. Profesionalni pisci znanstvenih medicinskih radova (»medical writer-i«) bi trebali popularizirati saznanje o postojanju i mogućnostima svojih usluga među hrvatskim ortopedima i traumatolozima koji bi svakako mogli imati potrebu za njihovom stručnošću.