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# Awareness and Use of Evidence-based Medicine Databases and Cochrane Library Among Physicians in Croatia

**Aim** To assess awareness and use of evidence-based medicine (EBM) databases and The Cochrane Library among physicians in Croatia.

**Methods** A cross-sectional study with a telephone survey was performed among 573 physicians (88.6% response rate from 647 contacted physicians) from family practice and 4 major university hospital centers in Croatia. The main outcome measures were physicians' awareness of The Cochrane Collaboration, awareness and use of The Cochrane Library, access to EBM databases, and access to internet at work.

**Results** Overall, 54% of respondents said they had access to EBM databases, but when asked which databases they used, they named mostly non-EBM databases. The question on the highest level of evidence in EBM was correctly answered by 53% respondents, 30% heard of The Cochrane Collaboration, and 34% heard about The Cochrane Library. They obtained information about The Cochrane Library mostly from colleagues and research articles, whereas the information about EBM was gained mainly during continuous medical education. There were more respondents who thought The Cochrane Library could help them in practice (58%) than those who heard about The Cochrane Library (30%). Only 20% of the respondents heard about the initiative for the establishment of the Croatian branch of The Cochrane Collaboration. Family physicians had significantly lower level of awareness, knowledge, and use of EBM and The Cochrane Library than physicians from university hospitals.

**Conclusion** There is low awareness about EBM and The Cochrane Library among physicians in Croatia, which creates a need for educational interventions about EBM for the benefit of health care in Croatia.

Katarina Novak<sup>1</sup>, Dino Mirić<sup>2</sup>, Ana Jurin<sup>3</sup>, Katarina Vukojević<sup>4</sup>, Jure Aljinović<sup>4</sup>, Ana Čarić<sup>4</sup>, Maja Marinović Guić<sup>4</sup>, Ana Poljičanin<sup>4</sup>, Vana Košta<sup>4</sup>, Dalibora Rako<sup>6</sup>, Ana Marušić<sup>4,5</sup>, Matko Marušić<sup>5</sup>, Livia Puljak<sup>4</sup>

<sup>1</sup>Department of Internal Medicine, University Hospital Center Split, University of Split School of Medicine, Croatia

<sup>2</sup>University of Split School of Medicine, Croatia

<sup>3</sup>Department of Anesthesiology, Čakovec County Hospital, Čakovec, Croatia

<sup>4</sup>Department of Anatomy, Histology and Embryology, University of Split School of Medicine, Croatia

<sup>5</sup>Department of Research in Medicine and Health, University of Split School of Medicine, Croatia

<sup>6</sup>Croatian Branch of Italian Cochrane Center, Split, Croatia

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**Correspondence to:**

Livia Puljak  
Department of Anatomy, Histology and Embryology  
School of Medicine in Split  
Šoltanska 2  
21000 Split, Croatia  
[livia@mefst.hr](mailto:livia@mefst.hr)

Evidence-based medicine (EBM) has emerged as a new paradigm for medical practice, integrating individual clinical expertise with the best available external clinical evidence and compassionate use of individual patients' rights and preferences in making clinical decisions about their care (1). Providing evidence-based care to patients involves turning a clinical problem into an answerable question, systematically searching for the best evidence relevant to the question, critically appraising that evidence, and using the evidence as the basis for clinical decisions to solve the problem (2).

The concept of EBM should persuade clinicians and consumers to pay attention to the best evidence from research that is both valid and clinically applicable, and there still remains much to be done to reach this goal (3). While the overload of medical information today presents a demanding challenge to physicians to sort and identify relevant and valid evidence, it is important to translate that evidence into clinically useful terms (2).

There are two sources of evidence – primary and secondary. Primary evidence is found in original bibliographic citations. Secondary sources include pre-appraised literature, such as systematic reviews written by experts in critical appraisal of primary citations. The use of secondary sources speeds up the process for busy physicians and it helps them to make sense of great amount of available research results by bringing together separately conducted studies, synthesizing their results, and providing evidence for clinical practice (4). EBM databases are resources that provide synopses of evidence-based information in an accessible form, and integration of answers to physicians' patient-related questions into clinical practice in the shortest, most specific way possible. Systematic reviews produced by The Cochrane Library are currently considered to be the "gold standard" in EBM (5).

The Cochrane Library contains high-quality, independent evidence to inform health care decision-making. The Cochrane Library contains several databases, including the Cochrane Database of Systematic Reviews (for Cochrane Reviews), Database of Abstracts of Reviews of Effects or DARE (structured abstracts of systematic reviews), and the Cochrane Central Register of Controlled trials or CENTRAL (which includes records of trials). Cochrane reviews are produced to the highest methodological standards, they search for and synthesize the results of available studies, and are recognized as the gold standard in evidence-based health care (6). The Cochrane Collaboration is

an international non-profit organization that was established in 1993 to help various stakeholders to prepare, update, and promote accessibility of Cochrane reviews (7).

Croatia is a South-Eastern European country with a population of 4.4 million (8). Physicians in Croatia are educated in a 6-year medical curriculum with a mandatory course on the principles of research in medicine on the second year, when students are exposed to EBM (9). Further structured education about EBM may be obtained in postgraduate master or doctoral programs or during mandatory continuing medical education (10). In 2004, a non-profit association Evidence-Based Medicine Society Croatia was founded with a purpose to promote EBM in Croatia (11). In 2008, the Croatian Branch of Italian Cochrane Center (CBICC) was founded at the School of Medicine in Split, Croatia (12). The principal goal of the CBICC is the promotion of EBM and systematic reviews through knowledge translation activities (12). Croatian health care institutions and medical schools also have access to a number of EBM databases, including The Cochrane Library. EBM databases are a part of the Center for Online Databases, funded by the Croatian Ministry of Science, Education, and Sports (13).

Since there are no previous studies about EBM awareness and knowledge among physicians in Croatia, there is no evidence to guide planning and providing educational activities of the CBICC or other EBM-related organizations or associations in Croatia. Our study aimed to assess the level of awareness and usage of EBM databases and The Cochrane Library among Croatian physicians working in family practice or clinical hospitals.

## METHODS

### Study design and setting

A telephone survey of 573 physicians in Croatia was conducted between September 2008 and December 2009. According to the information received from the Croatian Institute for Public Health, there were 2703 physicians employed in family practice in Croatia and 2226 physicians working at 4 Croatian University Hospitals and University Hospital Centers in September 2009.

For the survey of family physicians, we used a representative sample of 350 participants, developed for an earlier study (14). This sample was constructed from the list of all family physicians working in Croatia in 2001 (n = 2408)

and was stratified by age, sex, vocational training, practice size, and geographical distribution (14). Using a random number generator, we formed a sample of 10% of physicians employed in 4 major clinical University Hospitals in Croatia – in Zagreb, Rijeka, Split, and Osijek (n = 223). There were 53 family physicians and 21 physicians from university hospitals who refused to participate in the study. In such cases, another randomly selected physician at the same institution was surveyed; the process was repeated until the next respondent accepted to participate in the survey. The total number of contacted physicians was 647 (403 family physicians and 244 university hospital physicians), and the overall response rate was 88.6%. As non-respondents refused to participate in the telephone survey at its beginning, it was not possible to collect any demographic information on them needed to make comparisons with respondents. All respondents answered all survey questions.

### Survey instrument

A 30-item questionnaire was developed for the purpose of this study (web extra material). Using a combination of open- and closed-ended questions, physicians were asked about the number of patients they see daily, their need for assistance in diagnosing and deciding on therapy, internet usage, access to EBM databases, knowledge of EBM, awareness and use of The Cochrane Collaboration and The Cochrane Library, their professional status and institution, scientific degree, and age. Cronbach  $\alpha$  for the section of the questionnaire measuring awareness and knowledge about The Cochrane library was 0.879.

### Data analysis

Descriptive statistical analysis was performed using the GraphPad Prism (GraphPad software Inc, San Diego, CA, USA). The normality of data distribution was tested by Kolmogorov-Smirnov test. Normally distributed data were presented as mean and 95% confidence interval (CI), whereas data that were not normally distributed were presented as median and 95% CI. The age of the respondents from family medicine and university hospital samples was compared using unpaired *t*-test. The number of patients seen daily in these two groups was compared using Mann-Whitney test. Answers about awareness between family and university hospital physicians were compared using the  $\chi^2$  test of proportions. Correlation was calculated with Pearson correlation test.

## RESULTS

There were 77% (382/573) of women and 33% (191/573) of men in the total sample. The mean age was 46.8 (95% CI, 46.0-46.3) for women and 47.7 (95% CI, 46.3-49.1) for men. Median number of patients seen daily by family physicians was 55.0 (95% CI, 53.9-56.6) and 15.0 (95%CI, 17.5-20.7) by physicians from university hospitals. Among family physicians, 15% held master's and/or doctoral degrees, compared with 43% university hospital physicians (Table 1).

Most respondents (90%) indicated that sometimes they needed help in making a diagnosis, but there was no statistical difference between family and university hospital physicians ( $P=0.79$ ). When they did not know how to reach a decision about their patients, physicians from both groups most frequently consulted colleagues, followed by books, the internet, and research articles (Table 2). Significantly more family physicians had internet access at work:

TABLE 1. Respondents' characteristics

Characteristics	No (%) of physicians from	
	family medicine	university hospitals
<b>Sex:</b>		
male	76 (21.7)	115 (51.6)
female	274 (78.3)	108 (48.4)
<b>Age:</b>		
<30	8 (2.2)	7 (3.1)
30-39	33 (9.4)	45 (20.2)
40-49	157 (44.9)	102 (45.7)
50-59	119 (34.0)	60 (26.9)
≥60	33 (9.4)	9 (4.0)
<b>Average number of patients seen daily:</b>		
<20	0 (0.0)	143 (64.1)
20-39	13 (3.7)	57 (25.6)
40-59	184 (52.6)	16 (7.2)
60-79	138 (39.4)	1 (0.5)
80-100	15 (4.3)	2 (0.9)
<b>Type of physician:</b>		
specialist	172 (49.1)*	206 (92.4)
general physician	178 (50.9)	17 (7.6)
<b>Academic degree:</b>		
doctor of medicine†	298 (85.1)	127 (57.0)
master of science	48 (13.7)	54 (24.2)
doctor of science	4 (1.1)	42 (18.8)

\*Specialists in family medicine.

†Doctor of medicine is the first title received by medical students after 6 y of medical studies at the university; licensing examination can be taken after another year of internship, which is funded by the Ministry of Health and Social Welfare (15).

99% vs 83% among hospital physicians ( $P < 0.001$ ). However, significantly more hospital physicians than family physicians used the internet to solve dilemmas about patients (82% vs 65%,  $P < 0.001$ ). Common search engines, such as Google search, were the most common internet resource used among family physicians, compared with PubMed among hospital physicians (Table 2).

Regarding EBM, half of the respondents ( $n = 311$ , 54%) indicated that they had access to specialized EBM databases, but only 112 of these (36%) named EBM databases they used (Table 3). Knowledge of EBM was tested with a question about the hierarchy of evidence in medicine, where 52% (299/573) of all respondents answered correctly that systematic review of randomized controlled trials was the top level in the pyramid of evidence. Family physicians gave correct answer to this question significantly less often

**TABLE 2.** Consultations when uncertain about what to do with a patient

Question	No (%) of physicians from	
	family medicine	university hospitals
<b>Do you sometimes need help to choose diagnosis or therapy for your patient?*</b>		
yes	313 (89.4)	201 (90.1)
no	37 (10.6)	22 (9.9)
<b>When you do not know what to do with a patient, in any part of the work-up, where do you seek help?</b>		
books	232 (66.3)	152 (68.1)
colleagues	295 (84.3)	172 (77.1)
research articles	165 (47.1)	135 (6.5)
promotional material of pharmaceutical companies	119 (34.0)	37 (16.6)
internet	251 (71.7)	163 (73.1)
other	3 (0.9)	0
<b>Do you have Internet access at work?*</b>		
yes	347 (99.1)	186 (83.4)
no	3 (0.9)	37 (16.6)
<b>Do you use the internet to solve dilemmas about patients?*</b>		
yes	229 (65.4)	182 (81.6)
no	121 (34.6)	41 (18.4)
<b>Which internet sources do you use?</b>		
search engines (Google, etc.)	186 (53.1)	80 (35.9)
PubMed	20 (5.7)	119 (53.4)
specialized evidence-based medicine databases	42 (12.0)	52 (23.3)
other	3 (0.9)	18 (8.1)

\* $P < 0.01$ ,  $\chi^2$  test.

than hospital physicians (44% vs 65%,  $P < 0.001$ ). The majority of surveyed physicians got basic information about EBM during continuous medical education (356/573, 62%) or/and postgraduate school (129/573, 23%) (Table 3).

The familiarity with the concept of The Cochrane Collaboration was assessed with a set of 14 questions. Overall, 30% of all respondents said that they had heard about The Cochrane Collaboration (17% among family and 51% among hospital physicians) and 34% had heard about The Cochrane Library (20% family vs 55% hospital physicians;  $P < 0.001$ ). Among those who had heard about The Cochrane Library, the majority in both groups learned about it from colleagues and research articles (Table 4). There were 10% (58/573) of physicians who had used The Cochrane Library and 9% (54/573) who had read system-

**TABLE 3.** Participants' responses regarding evidence-based medicine (EBM)

Question	No (%) of physicians from	
	family medicine	university hospitals
<b>Do you have access to specialized EBM databases?*</b>		
yes	222 (63.4)	89 (39.9)
no	106 (30.3)	117 (52.5)
I do not know	22 (6.3)	17 (7.6)
<b>Which EBM databases do you use? (open-ended question)<sup>†</sup></b>		
MEDLINE	41 (11.7)	10 (4.5)
PubMed	2 (0.6)	24 (10.8)
MedScape	2 (0.6)	9 (4.0)
The Cochrane Library	5 (1.4)	4 (1.8)
OVID	0	7 (3.1)
SCOPUS	0	5 (2.2)
PLIVAMED.net	3 (0.9)	0
<b>In the hierarchy of evidence in medicine, the top level evidence is:</b>		
case report	135 (38.6)	12 (5.4)
prospective cohort study	30 (8.6)	39 (17.5)
systematic review of randomized controlled trials	153 (43.7)	146 (65.5)
single randomized controlled trial	31 (8.9)	11 (4.9)
<b>Where did you get basic information about EBM?</b>		
undergraduate education	35 (10.0)	12 (5.4)
postgraduate school	82 (23.4)	47 (21.1)
continuous medical education	229 (65.4)	127 (56.9)
other	8 (2.3)	37 (16.6)

\* $P < 0.01$ ,  $\chi^2$  test.

<sup>†</sup>Open-ended question with a possibility of more than one answer by a single respondent.

TABLE 4. Responses regarding The Cochrane Library

Question	No (%) of physicians from	
	family medicine	university hospitals
<b>Did you hear about The Cochrane Collaboration?*</b>		
yes	60 (17.1)	113 (50.7)
no	290 (82.9)	110 (49.3)
<b>Did you hear about The Cochrane Library?*</b>		
yes	69 (19.7)	123 (55.2)
no	281 (80.3)	100 (44.8)
<b>Where did you get information about The Cochrane Library?</b>		
books	6 (1.7)	10 (4.5)
colleagues	40 (11.4)	22 (9.9)
research articles	11 (3.1)	22 (9.9)
leaflets of pharmaceutical companies	0 (0.0)	0 (0.0)
internet	4 (1.1)	21 (9.4)
other	6 (1.7)	5 (2.2)
<b>Do you ever use The Cochrane Library?*</b>		
yes	16 (4.6)	42 (18.8)
no	334 (95.4)	181 (81.2)
<b>Do you ever read systematic reviews in The Cochrane Library?*</b>		
yes	16 (4.6)	38 (17.0)
no	334 (95.4)	185 (83.0)
<b>Do you mostly read summaries of Cochrane systematic reviews or full text?*</b>		
summaries	16 (4.6)	37 (16.6)
full text	0 (0.0)	5 (2.2)
<b>From where do you access The Cochrane Library?</b>		
work	7 (2.0)	21 (9.4)
home	9 (2.6)	15 (6.7)
other	0 (0.0)	4 (1.8)
<b>How often do you use The Cochrane Library?</b>		
fewer than once a month	3 (0.9)	20 (8.9)
once a month	6 (1.7)	12 (5.4)
several times (2,3) a month	7 (2.0)	10 (4.5)
once a week	0 (0.0)	3 (1.3)
several times a week	0 (0.0)	0 (0.0)
<b>Did The Cochrane Library help you in solving a problem in your practice?</b>		
not at all	1 (0.3)	9 (4)
very little	3 (0.9)	26 (11.7)
it helped me enough	11 (3.1)	0 (0.0)
very much	1 (0.3)	3 (1.3)
completely	0 (0.0)	1 (0.4)

TABLE 4. Responses regarding The Cochrane Library ... continued

Question	No (%) of physicians from	
	family medicine	university hospitals
<b>Do you think that The Cochrane Library could help you solve problems that you encounter in your practice?*</b>		
yes	187 (53.4)	144 (64.6)
no	124 (35.4)	50 (22.4)
I do not know	12 (3.4)	8 (3.6)
<b>Are you interested in methodology of making a Cochrane systematic review?</b>		
yes	96 (27.4)	75 (33.6)
no	254 (72.6)	148 (66.4)
<b>Did you hear about the founding of a branch of The Cochrane Collaboration in Croatia?*</b>		
yes	32 (9.1)	83 (37.2)
no	318 (90.9)	140 (62.8)
<b>Did you read summaries of Cochrane systematic reviews in Medical Gazette?*</b>		
yes	45 (12.9)	50 (22.4)
no	305 (87.1)	173 (77.6)
<b>Do you recall any titles of Cochrane review summaries that were published in <i>Liječničke Novine</i>?</b>		
yes	2 (0.6)	4 (1.8)
no	43 (12.3)	46 (20.6)

\* $P < 0.01$ ,  $\chi^2$  test.

atic reviews from The Cochrane Library. The knowledge and the use of The Cochrane Library was more common among hospital physicians. The respondents mostly read summaries of systematic reviews instead of the whole systematic reviews, most of them accessed The Cochrane Library from work, and most used it less than once a month (Table 4). When asked if The Cochrane Library helped them in solving problems in practice, 39 (67% of those who said they were users) responded that it did not help at all or helped very little, whereas 15 (28% of users) reported that it helped them enough or very much. A single respondent said that the satisfaction with the help from The Cochrane Library was complete (Table 4). When asked if they thought that The Cochrane Library could help them solve problems in their practice, 58% ( $n = 331$ ) answered positively and 30% ( $n = 171$ ) indicated that they would like to learn the methodology for doing Cochrane systematic reviews (27% family physicians and 34% hospital physicians). There were 16% ( $n = 57$ ) of family physicians and 27% of hospital physicians ( $n = 64$ ) who did not hear

about The Cochrane Library, but indicated that they would like to learn Cochrane methodology.

Internet access at work or use of The Cochrane Library was not correlated with age ( $r = -0.058$ ,  $P = 0.163$  and  $r = -0.043$ ,  $P = 0.316$ ; respectively), and using the internet to solve dilemmas about patients was not related to sex ( $r = 0.048$ ,  $P = 0.247$ ). Male sex was associated with knowledge about the existence of The Cochrane Library ( $r = -0.110$ ,  $P = 0.008$ ) and access to the internet at work ( $r = -0.094$ ,  $P = 0.025$ ), but female sex was associated with its use ( $r = 0.086$ ,  $P = 0.043$ ). Younger age was associated with using the internet to solve dilemmas about patients ( $r = -0.112$ ,  $P = 0.007$ ) and knowledge about The Cochrane Library ( $r = -0.140$ ,  $P = 0.001$ ). All of the associations were weak.

In the whole sample, 20% ( $n = 115$ ) respondents were aware of the initiative for establishing the Croatian Branch of The Cochrane Collaboration, with a significant difference between the two groups (9% family vs 37% hospital physicians;  $P = 0.001$ ) (Table 4). As the CBICC started publishing the summaries of Cochrane reviews in *Lijecničke novine*, the official journal of the Croatian Medical Chamber received by all licensed physicians in Croatia in June 2008, we also assessed whether these summaries were read by physicians in Croatia. Only 95 physicians (17%) said that they read these summaries; among them only 6 (6%) were able to recall at least one title (Table 4).

## DISCUSSION

Our survey showed that about a half of the physicians in Croatia had access to the EBM databases and that the same fraction knew that systematic review was the highest level of evidence in EBM. About a third of the respondents heard about The Cochrane Collaboration and The Cochrane Library but only one tenth of respondents reported its use, mostly to read summaries of reviews. Significantly lower level of EBM knowledge and awareness was present among family physicians than among university hospital physicians. These findings demonstrate that the awareness and use of EBM databases and The Cochrane Library among physicians in Croatia is not satisfactory.

These results need to be considered with caution. For example, one fifth of physicians expressed their willingness to learn about the methodology of making Cochrane systematic reviews even though they previously said that they had not heard about The Cochrane Library. Also, in both groups there were more participants who thought

that The Cochrane Library might help them in practice than those who had heard about The Cochrane Library. Such discrepancies may indicate social desirability bias (16) or respondents' wish to learn about such tools even if they were not familiar with them. When participants were asked which EBM databases they used, the most frequent responses were MEDLINE and PubMed, which are not EBM databases, demonstrating the actual lack of familiarity with EBM databases.

Surveys of knowledge, use, and attitudes toward EBM were performed in different geographical and socio-economic settings. In a survey about attitude, awareness, and practice of EBM in government hospitals in Saudi Arabia (17), almost all respondents had positive attitude about EBM but only about a half reported regular use of EBM in their daily clinical practice. The lack of regular distribution of updated clinical letters, journals, or guidelines was considered to be a major barrier for practicing EBM, followed by a lack of available time and internet access. Participants in this study also reported low level of awareness about extracting journals, review publications, and databases related to EBM. A survey of attitudes, awareness, and barriers regarding evidence-based surgery among surgeons and surgical nurses in The Netherlands showed that 90% of the surgeons were familiar with evidence-based surgery terms, compared with only 40% of the nurses (18). Common barriers for surgeons were conflicting results and the methodological inadequacy of research reports and unawareness of evidence-based surgery and unclear research reporting for nurses. In a survey performed among general practitioners in England about their perceptions of the route to EBM, respondents mainly welcomed EBM and agreed that its practice improved patient care (19). They had a low level of awareness of extracting journals, review publications, and databases (only 40% were aware of the Cochrane Database of Systematic Reviews), and, even if aware, many did not use them. At work, 20% had access to bibliographic databases and 17% to the internet. Most had some understanding of the technical terms used. These results are comparable with our findings, although, unlike Croatia, England is a high-income country. A study from India provides a developing country perspective (20), showing that a half of the surveyed physicians were aware of EBM, one third were aware of The Cochrane Library, and 15% were aware of systematic reviews. Unlike physicians, nurses and health care consumers were not at all aware of EBM, The Cochrane Library, and systematic reviews.

In our study, physicians from family medicine practices were less familiar with EBM and The Cochrane Library than

physicians from a university hospital setting. This can be in part explained by the fact that primary health care offices are not a part of the academic network providing access to online bibliographical and information resources. However, family medicine practices have access to the internet and thus to the abstracts of The Cochrane Library and other free EBM-related content.

In Croatia, primary health care has a long tradition and represents patients' gateway to the health care system (21). A recent study showed that family medicine practitioners in the context of intensive socioeconomic transitions in Croatia had positive attitude toward scientific research in medicine (22). However, positive attitudes do not suffice for real engagement of family physicians in teaching and research (23,24). Research has shown that residency programs that include research training did not affect research output or use of research in everyday practice (23), indicating that greater emphasis should be placed on teaching EBM principles and encouraging research activities already in medical school.

One of the potential reasons for the differences between family and hospital physicians could be the difference between them in obtained postgraduate degrees. There were three times more hospital physicians with master's and doctoral degrees than family physicians. Postgraduate schools offer more opportunities to learn about EBM, and preparation of thesis requires literature search and use of various databases. It has already been observed that family physicians in Croatia had positive attitude toward science, but only 6% published an article in a PubMed-indexed journal (22). At 4 medical schools in Croatia, a total of 61 faculty members in the Departments of Family Medicine in 2007 published 316 scientific and professional articles and a half of them had research degrees (25). However, family medicine faculty comprises only 2% of family physicians in Croatia and they are not representative of family medicine practitioners in Croatia. While there are no systematic surveys about publications of Croatian family physicians, research from other settings shows that the number of research articles in family medicine field is decreasing (26). Attitudes toward science have not been explored among physicians in Croatia employed in hospitals, but it has to be kept in mind that our survey sample included physicians working in academic hospital setting of the university hospitals.

Our study focused on physicians and not on other health care workers who should also practice EBM principles and

use EBM databases, which may present a limitation of the estimate of awareness and use of EBM in health care in Croatia. However, based on the experience from both developed and developing countries (19,20), we would expect that health care professionals other than physicians have an even lower awareness and use of EBM. Another limitation of the study is unbalanced sample of family physicians and hospital physicians, covering about 14% of the family medicine and 10% of the university hospital physicians. However, these differences were not of the size that would greatly affect study results or limit their generalization to the whole populations of physicians. Furthermore, we did not explore barriers for practicing and using EBM sources in Croatia, which we plan to address in future studies.

In conclusion, our study demonstrated that there was a need to educate physicians in Croatia about EBM and the usefulness of EBM resources such as The Cochrane Library. The majority of Croatian physicians have access to the internet and EBM databases in public health care institutions, which solves at least one of the obstacles for practicing EBM observed in other studies (27). Establishing awareness and educational needs of physicians is a good step forward in devising strategies to promote EBM in a transitional country like Croatia.

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#### References

- 1 Mears R, Sweeney K. A preliminary study of the decision-making process within general practice. *Fam Pract*. 2000;17:428-9. [Medline:11021904](https://pubmed.ncbi.nlm.nih.gov/11021904/) [doi:10.1093/fampra/17.5.428](https://doi.org/10.1093/fampra/17.5.428)

- 2 Tanjong-Ghogomu E, Tugwell P, Welch V. Evidence-based medicine and the Cochrane Collaboration. *Bull NYU Hosp Jt Dis.* 2009;67:198-205. [Medline:19583554](#)
- 3 Haynes RB. What kind of evidence is it that Evidence-Based Medicine advocates want health care providers and consumers to pay attention to? *BMC Health Serv Res.* 2002;2:3. [Medline:11882257](#) [doi:10.1186/1472-6963-2-3](#)
- 4 Geyman JP, Wolf FM. Evidence-based medicine. In: Norris TE, editor. *Informatics in primary care.* New York (NY): Springer Verlag; 2002. p. 71-88.
- 5 Borlawsky T, Friedman C, Lussier YA. Generating executable knowledge for evidence-based medicine using natural language and semantic processing. *AMIA Annu Symp Proc.* 2006;56-60.
- 6 The Cochrane Library. Available from: [www.thecochranelibrary.com](http://www.thecochranelibrary.com). Accessed: March 17, 2010.
- 7 The Cochrane Collaboration. Available from: [www.cochrane.org](http://www.cochrane.org). Accessed: March 17, 2010.
- 8 The Central Bureau of Statistics of the Republic of Croatia. Basic information for 2008 about the Republic of Croatia. Available from: [http://www.dzs.hr/hrv/publication/2009/7-1-4\\_1h2009.htm](http://www.dzs.hr/hrv/publication/2009/7-1-4_1h2009.htm). Accessed: March 17, 2010.
- 9 Huic M. Fifteenth anniversary of the Croatian Medical Journal: still moving ahead. *Croat Med J.* 2008;49:1-7. [Medline:18293449](#) [doi:10.3325/cmj.2008.1.1](#)
- 10 Drazancic A. Continuing medical education in Croatia and the European Union [in Croatian]. *Lijec Vjesn.* 2000;122:246-55. [Medline:11210822](#)
- 11 Evidence-Based Medicine Society Croatia. Available from: <http://www.ebm-society-croatia.net/eng.htm>. Accessed: March 17, 2010.
- 12 Puljak L, Rako D. Enhancing medical practice in Croatia through The Cochrane Collaboration. *Biochem Med.* 2009;19:260-5.
- 13 Petrovecki M, Paar V, Primorac D. Can Croatia join Europe as competitive knowledge-based society by 2010? *Croat Med J.* 2006;47:809-24. [Medline:17167853](#)
- 14 Sambunjak D, Huic M, Hren D, Katic M, Marusic A, Marusic M. National vs. international journals: views of medical professionals in Croatia. *Learn Publ.* 2009;22:57-70. [doi:10.1087/095315108X378785](#)
- 15 Marinovic D, Hren D, Sambunjak D, Rasic I, Skegro I, Marusic A, et al. Transition from longitudinal to block structure of preclinical courses: outcomes and experiences. *Croat Med J.* 2009;50:492-506. [Medline:19839073](#) [doi:10.3325/cmj.2009.50.492](#)
- 16 King MF, Bruner BC. Social desirability bias: A neglected aspect of validity testing. *Psychol Mark.* 1999;17:79-103. [doi:10.1002/\(SICI\)1520-6793\(200002\)17:2<79::AID-MAR2>3.0.CO;2-0](#)
- 17 Al-Omari FK, Al-Asmary SM. Attitude, awareness and practice of evidence based medicine among consultant physicians in Western region of Saudi Arabia. *Saudi Med J.* 2006;27:1887-93. [Medline:17143370](#)
- 18 Knops AM, Vermeulen H, Legemate DA, Ubbink DT. Attitudes, awareness, and barriers regarding evidence-based surgery among surgeons and surgical nurses. *World J Surg.* 2009;33:1348-55. [Medline:19412569](#) [doi:10.1007/s00268-009-0020-8](#)
- 19 McColl A, Smith H, White P, Field J. General practitioner's perceptions of the route to evidence based medicine: a questionnaire survey. *BMJ.* 1998;316:361-5. [Medline:9487174](#)
- 20 Mathew J, Singh M. Making the resources of the Cochrane Collaboration 'of, by and for the people': a developing country perspective. Available from: <http://www.imbi.uni-freiburg.de/OJS/cca/index.php/cca/article/view/1203>. In: 13th Cochrane Colloquium. Melbourne, Australia; 2005. Accessed: March 17, 2010.
- 21 Katic M, Juresa V, Oreskovic S. Family medicine in Croatia: past, present, and forthcoming challenges. *Croat Med J.* 2004;45:543-9. [Medline:15495277](#)
- 22 Rogulj ZM, Baloevic E, Dogas Z, Kardum G, Hren D, Marusic A, et al. Family medicine practice and research: survey of physicians' attitudes towards scientific research in a post-communist transition country. *Wien Klin Wochenschr.* 2007;119:164-9. [Medline:17427019](#) [doi:10.1007/s00508-007-0777-4](#)
- 23 Smith M. Research in residency: do research curricula impact post-residency practice? *Fam Med.* 2005;37:322-7. [Medline:15883897](#)
- 24 Askew DA, Clavarino AM, Glasziou PP, Del Mar CB. General practice research: attitudes and involvement of Queensland general practitioners. *Med J Aust.* 2002;177:74-7. [Medline:12098342](#)
- 25 Rumboldt M, Petric D, Kuzmanic M. A review of scientific-research work in family medicine: present situation [in Croatian]. Abstract book from Croatian days of primary health care. Labin, Croatia. Zagreb: Hrvatska udružba obiteljske medicine; 2007.
- 26 Weiss BD. Publications by family medicine faculty in the biomedical literature: 1989-1999. *Fam Med.* 2002;34:10-6. [Medline:11838521](#)
- 27 Katic M, Soldo D, Ozvacic Z, Blazekovic-Milakovic S, Vrcic-Keglevic M, Bergman-Markovic B, et al. Information systems and the electronic health record in primary health care. *Inform Prim Care.* 2007;15:187-92. [Medline:18005568](#)