

The application of evidence-based practice in selected health science professions – the review of international literature

(Zastosowanie *Evidence-based Practice* w wybranych grupach specjalistów nauk o zdrowiu - przegląd światowego piśmiennictwa)

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Abstract – The application of evidence-based practice (EBP) in the selected health science professions is a widely discussed topic in the available international literature.

The aim of this paper was to analyse the current works discussing the general issue of medical practice based on facts and scientific evidence. The specialist groups to which this kind of practice can be applied includes nurses, midwives, dieticians, and physiotherapists.

The search for references was performed by qualified librarians employed at the Medical University of Warsaw Library. The databases used were EMBASE, PROQUEST, PUBMED, and SCOPUS. The articles analysed were written in English and published between 2000-2013 (publication date between 1st January 2000 to 12th November 2013).

A total of 1001 articles discussing evidence-based practice in selected medical professions were found.

The articles were reviewed by the authors according to the following criteria: the specialist group in health science, the branch of medicine and the journal concerned.

The available international scholarly literature most frequently deals with the application of latest scientific research results in various professional groups and in nursing. The analyses pertain to dietetics least frequently. A vast majority of articles are original papers presenting the results of clinical studies based on the EBP paradigm published in journals with Impact Factor 1 to 2.

Key words – medical practice, scientific evidence, literature, nurses, midwives, dieticians, physiotherapists.

Streszczenie – Zastosowanie Evidence-based Practice w wybranych grupach specjalistów nauk o zdrowiu jest tematem szeroko podejmowanym w dostępnej, aktualnej literaturze światowej.

Celem pracy była analiza dostępnego, aktualnego piśmiennictwa światowego podejmującego szeroko pojętą problematykę

praktyki zawodowej opartej na faktach i dowodach naukowych w grupach specjalistów nauk o zdrowiu: pielęgniarek, położnych, dietetyków oraz fizjoterapeutów.

Wyszukiwanie piśmiennictwa przeprowadzone zostało przez dyplomowanych bibliotekarzy z Biblioteki Głównej Warszawskiego Uniwersytetu Medycznego. Dokonano analizy światowego piśmiennictwa naukowego indeksowanego w bazach: EMBASE, PROQUEST, PUBMED, SCOPUS. Analizowano artykuły w języku angielskim z lat 2000-2013 (data publikacji 1.01.2000-12.11.2013).

Odnaleziono łącznie 1001 artykułów podejmujących szeroko pojętą problematykę zastosowania Evidence-based Practice w wybranych grupach specjalistów nauk o zdrowiu.

W pracy dokonano autorskiego przeglądu piśmiennictwa według trzech niżej wymienionych kryteriów: wybranych grup specjalistów nauk o zdrowiu, według dziedziny medycyny oraz według czasopism.

W dostępnym, światowym aktualnym piśmiennictwie naukowym najczęściej publikacji dotyczy zastosowania najnowszych wyników badań naukowych w zespołach dyscyplinarnych oraz w pielęgniarstwie, najmniej - dietetyki. Zdecydowana większość publikacji to prace oryginalne, prezentujące wyniki badań klinicznych prowadzonych w oparciu o paradygmat EBP, publikowane w czasopismach posiadających IF mieszczący się w przedziale 1-2.

Słowa kluczowe – praktyka zawodowa, dowody naukowe, literatura, pielęgniarki, położne, dietetycy, fizjoterapeuci

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Authors' contributions to the article:

A. The idea and the planning of the study

- B. Gathering and listing data
- C. The data analysis and interpretation
- D. Writing the article
- E. Critical review of the article
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I. INTRODUCTION

Despite the fact that the idea behind evidence-based medicine (EBM) has been developing for a mere dozen years, it is now considered a breakthrough in medicine [1-8].

In 1979, a British epidemiologist, Archie Cochrane, noted: *“It is surely a great criticism of our profession that we have not organised a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomised controlled trials.”* The term evidence-based medicine was first used in 1991 by Gordon Guyatt, a medicine and clinical epidemiology professor at McMaster University in Hamilton, Canada. The idea behind it is a systematic and consistent use of verified, credible and current study results in everyday medical practice and the elimination of low effectiveness and unjustified expenses [1-8].

The significant advantages drawn from basing a medical practice on scientific research results are also acquiring and updating knowledge on a regular basis, awareness of the effectiveness of one’s actions, wider perspective of approaching a clinical case and the possibility of introducing innovations to the treatment based on credible research results [1-8].

All available publications also stress the fact that a very important element of EBP is allowing a patient to actively participate in the treatment-related decision-making process, as it is the patients (especially the chronically ill) who are the party most interested in the outcomes of the procedures implemented. One of the tenets of EBP is the patients’ right to information as well as the option to reject an unacceptable form of treatment and choose a preferred method [1-8].

According to the tendencies observed worldwide for the last several years in the practice of various health

science specialists (dieticians, physiotherapists, nurses, and midwives), more and more emphasis is placed on incorporating research results in everyday medical practice. It can contribute not only to a patient’s and cross-functional team’s safety as well as the effectiveness of clinical procedures, but also to financial outcomes [1-8].

The awareness of the advantages that using latest research results by health science professionals could bring is a necessary condition of the successful promotion of broadening one’s knowledge and competences on research methodology, critical results analysis or any other element of evidence-based practice [1-8].

II. AIM OF THE STUDY

The aim of the study was to analyse the available and up-to-date international literature on medical practice based on scholarly research. The relevant fields were nursing, midwifery, dietetics and physiotherapy.

III. LITERATURE REVIEW

Selection criteria

The search was performed by qualified librarians employed at the Medical University of Warsaw Library.

The worldwide scholarly literature analysed was stored in the following databases: EMBASE, PROQUEST, PUBMED, and SCOPUS. The studied works had to be in English and their publication date had to be between 2000 and 2013 (1st January 2000 to 12th November 2013). Detailed search criteria (keywords and descriptors) used in each database are presented in Table 1.

Table 1. Detailed search criteria applied to the selected worldwide databases

Database	Search criteria
EMBASE	'evidence based nursing':de AND practice:de AND ([english]/lim OR [polish]/lim) AND [2000-2014]/py,
PROQUEST	su(evidenceBased Nursing) AND su(Health Knowledge, Attitudes, Practice)
PUBMED	(evidence based nursing [MeSH Terms]) AND Health Knowledge, Attitudes, Practice [MeSH Terms] ("evidence based practice" [MeSH Major Topic]) AND "health knowledge, attitudes, practice" [MeSH Major Topic] AND "dietetics" [MeSH Major Topic] OR "physical therapists" [MeSH Major Topic]
SCOPUS	KEY ("evidence based nursing") AND KEY (knowledge attitudes practice)KEY ("evidence based practice") AND KEY (nurs*) OR KEY (diet*) OR KEY (physiotherap*) AND KEY (knowledge attitudes practice)

The search performed in this manner returned 1001 articles that met the criteria and could be included in the literature review.

The authors reviewed the documents according to the following criteria:

- By the selected health science profession,
- By the branch of medicine,
- By journal.

IV. LITERATURE REVIEW BY THE SELECTED HEALTH SCIENCE PROFESSION

Considering the fact that the aim of the study was to analyse the available up-to-date literature on evidence-based medical practice in general applied in nursing, midwifery, dietetics, physiotherapy and cross-functional teams, the first criterion for the analysis was the profession concerned. The most publications in the international literature available pertained to basing practice on latest research results and evidence in professional teams and in nursing. The least number of articles on evidence-based practice were related to dietetics. The detailed results are presented in Table 2.

Table 2. International literature review by the selected health science professional groups

Database	Dietetics <i>Nutrition Dieticians</i>	Physiotherapy <i>Physiotherapy Physiotherapists</i>	Nursing <i>Nursing Nurses</i>	Midwifery <i>Midwifery Midwives</i>	Cross-functional team <i>Cross-functional team</i>
EMBASE	0	0	47	1	49
PROQUEST	0	1	53	0	69
PUBMED	2	143	79	10	109
SCOPUS	6	16	191	15	191

V. LITERATURE REVIEW BY THE BRANCH OF MEDICINE

Another criterion assumed for the purpose of the analysis was the branch of medicine to which a study pertained. The most publications were related to nursing in general (33.2% of all publications analysed). Significantly fewer works referred to physiotherapeutic practice (7%). The details are recapitulated in Table 3.

Table 3. The review of worldwide literature by the most frequently represented branches of medicine

Branch of medicine*	Number of publications	Percentage
Nursing	228	33.2%
Rehabilitation	52	7.6%
Health Care Sciences & Services	23	3.3%
Orthopaedics	22	3.2%
Education, Scientific Disciplines	16	2.3%
Critical Care Medicine	14	2.0%
Public, Environmental & Occupational Health	10	1.5%
Medical Informatics	10	1.5%
Obstetrics & Gynaecology	10	1.5%
Oncology	10	1.5%
Rheumatology	10	1.5%

* the remaining branches were: Paediatrics, Clinical Neurology, Nutrition & Dietetics, Psychiatry, Infectious Diseases, Pharmacology & Pharmacy, Respiratory System, Geriatrics & Gerontology, Cardiac & Cardiovascular Systems, Surgery, Primary Health Care, Emergency Medicine, Sport Sciences

VI. LITERATURE REVIEW BY JOURNAL – BIBLIOMETRIC ANALYSIS

In the original database there were 844 records, a number that was reduced to 687 after removing duplicates (the duplicate ratio was 18.6%). The citations were analysed using the data collected from the following bibliography and abstract databases: *Google Scholar*, *Scopus* and *Web of Science*. The Impact Factor values were based on the *Journal Citation Reports* database (Thomson Reuters), whereas the h-index values were based on the *Scopus* database.

The literature was analysed by journal titles and the most widely published articles (Table 4), by the most influential publications considering the number of citations and Impact Factor (Table 5) and by most influential authors considering the h-index (Table 6).

Similarly to the case of analysing the works by health science professionals and most frequently appearing branches of medicine, the journals that publish largest numbers of the articles studied are mainly nursing-related: *Worldviews on Evidence-Based Nursing*, *Journal of Advanced Nursing*, *Intensive & Critical Care Nursing*, *Journal of Nursing Management*, *Journal of Clinical Nursing*, *Journal of Nursing Education*, and *Journal for nurses in staff development* (Table 4).

A noteworthy observation is that the dominant works in the group of most influential articles (12 publications that are referred to over 100 times) are articles on the health science professionals' attitudes towards scholarly research. Not one of the most cited papers is a clinical study. What is also worth emphasising is the fact that 112 publications are not referred to anywhere and that amounts to 16.3% of the studied collection (Table 5). The group of most influential authors is dominated by those from the USA, Canada and the UK (Table 6).

Table 4. The literature analysis by journals with the largest number of publications

Journal	Medicine branch	Number of publications	Percentage
<i>Worldviews on Evidence-Based Nursing</i>	Nursing	43	6.3%
<i>Journal of Advanced Nursing</i>	Nursing	35	5.1%
<i>Physical Therapy</i>	Orthopaedics	20	2.9%
<i>Physiotherapy Theory and Practice</i>	Rehabilitation	20	2.9%
<i>Intensive & Critical Care Nursing</i>	Critical Care Medicine	14	2.0%
<i>Journal of Nursing Management</i>	Nursing	13	1.9%
<i>Journal of Clinical Nursing</i>	Nursing	11	1.6%
<i>Journal of Physiotherapy</i>	Rehabilitation	11	1.6%
<i>Journal of Nursing Education</i>	Nursing	10	1.5%
<i>Journal for nurses in staff development</i>	Nursing	10	1.5%

Table 5. The literature analysis by the most influential publications

First author	Publication title	Citation number*	Journal	Impact Factor	Medicine branch
Pravikoff DS	Readiness of U.S. nurses for evidence-based practice	430	<i>American Journal of Nursing</i>	1.389	NURSING
Jette DU	Evidence-based practice: Beliefs, attitudes, knowledge, and behaviors of physical therapists	350	<i>Physical Therapy</i>	2.794	ORTHOPAEDICS
Estabrooks CA	Individual determinants of research utilization: A systematic review	342	<i>Journal of Advanced Nursing</i>	1.527	NURSING
Thompson C	Research information in nurses' clinical decision-making: What is useful?	213	<i>Journal of Advanced Nursing</i>	1.527	NURSING
Melynk BM	Nurses' perceived knowledge, beliefs, skills, and needs regarding evidence-based practice: Implications for accelerating the paradigm shift	207	<i>Worldviews on Evidence-Based Nursing</i>	1.349	NURSING
Gerrish K	Promoting evidence-based practice: An organizational approach	199	<i>Journal of Nursing Management</i>	1.454	NURSING
Pronovost P	Translating evidence into practice: A model for large scale knowledge translation	169	<i>British Medical Journal</i>	17.215	MEDICINE GENERAL & INTERNAL
Jennings BM	Misconceptions among nurses about evidence-based practice	161	<i>Journal of Nursing Scholarship</i>	1.612	NURSING
Estabrooks CA	The Internet and access to evidence: How are nurses positioned?	157	<i>Journal of Advanced Nursing</i>	1.527	NURSING

Brown CE	Nursing practice, knowledge, attitudes and perceived barriers to evidence-based practice at an academic medical center	155	<i>Journal of Advanced Nursing</i>	1.527	NURSING
Bryar RM	The Yorkshire BARRIERS project: Diagnostic analysis of barriers to research utilisation	135	<i>International Journal of Nursing Studies</i>	2.075	NURSING
Klempell RM	Nurse practitioners and physician assistants in the intensive care unit: An evidence-based review	110	<i>Critical Care Medicine</i>	6.124	CRITICAL CARE MEDICINE

* 12 publications which were cited over 100 times provide 25% of all references to the bibliography analysed, which yields an impact coefficient of 2% for each of them
 * 112 publications were not cited anywhere, which amounts to 16.3% of the collection analysed

lysed group were published in journals with no Impact Factor. The detailed analysis is presented in Figures 1 and 2.

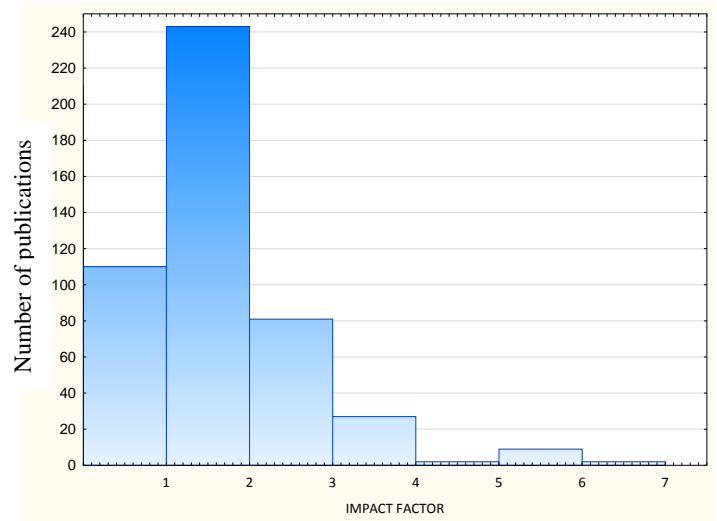


Figure 1. Number of publications related to the Impact factor of a journal

Table 6. The literature analysis by the most influential authors

Author	h-index	Affiliation
Pronovost P	66	University of Florida College of Medicine, United States
Blot SI	38	Universiteit Gent, Department of Internal Medicine, Belgium
Estabrooks CA	33	University of Alberta, Faculty of Nursing, Canada
Davis D	29	Association of American Medical Colleges, Washington, United States
Melnyk BM	24	Ohio State University, College of Medicine, Columbus, United States
Korner-Bitensky N	23	McGill University, School of Physical and Occupational Therapy, Canada
McKenna H	21	University of Ulster, Research and Innovation, United Kingdom
McCormack B	20	University of Ulster, Institute of Nursing and Health Research, United Kingdom

* overall h-index in the collection analysed is 410.8 authors with h > 20, which yields h-index of 254

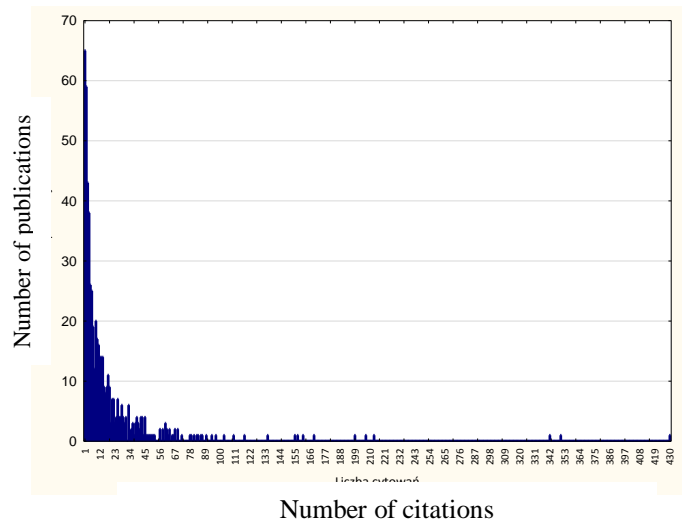


Figure 2. Number of citations in the bibliography analysed*

Another analysis pertained to the Impact Factor of the journals publishing articles from the relevant field. Publications in journals with Impact Factor of 1 to 2 were dominant. Importantly enough, 210 articles in the ana-

As the article discusses a review of 1001 works, the full and detailed list of references is available in an electronic form and can be obtained from the authors of this paper.

VII. THE LIMITATIONS TO THE ANALYSIS PRESENTED

A significant limitation in the analysis presented herein is the lack of access to the full text of all publications. Disputes over the idea of Open Access, which was first introduced in 2002 (the Budapest Declaration) have been going on until today and stirring controversy among scholars and journal publishers. However, the analysis of this phenomenon is not the purpose of this paper. Nevertheless, no access to full, free of charge scholarly publications was an obstacle to conducting a thorough analysis of research material. Some articles offered no abstracts – those papers were also excluded from the analysis.

VIII. DIRECTIONS FOR FURTHER ANALYSES

This paper presents the authors' review of literature based on four selected criteria: health science professional groups, the branch of medicine, the kind of publications and journals (bibliographic analysis). The large number of articles on the issue of applying research results in healthcare practice makes it possible to explore the matter in other directions.

One of the most significant directions for further studies might be analysing the publications related to clinical issues by their credibility, e.g. assessed on the Sackett scale. Such analysis could also take into account the frequency of quantitative and qualitative research.

What is more, many publications unrelated directly to the implementation of study results in medical practice have been found among the references. Many publications pertain to the knowledge and attitudes of health science professionals with regard to using research results. Some papers also discuss the issues of management and the education of nurses. Such publications shall be analysed in another review of literature.

IX. REFERENCES

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In this list of references, only the most important sources on the tenets of research on evidence-based practice and evidence-based medicine in the practice of physicians and health science professionals.