

Conducting biomedical research and preparing scientific publications

Wojciech Kozubski

Department of Neurology, Poznan University of Medical Sciences, Poznań, Poland

The subject of scientific methodology has not been given enough thought – to say the least – in the current educational curriculum of medical and other studies. As a result of this oversight, we witness a striking lack of knowledge in the field of research methodology. Young researchers are therefore left to either fend for themselves or seek help from statisticians, who often lack specific expertise required to conduct research in the field of life sciences.

A recent 2-volume publication entitled *Conducting biomedical research and preparing scientific publications* (original title: *Badania i publikacje w naukach biomedycznych*, Cezary Watała, Marcin Różalski, Magdalena Boncler, Piotr Kaźmierczak; alfa-Medica Press, 2011) fills this enormous gap in the publishing field in an extraordinary and truly superb manner. With this publication, the Polish publishing market receives a long-awaited and, so far, incomparably meticulous account of essential research methodology in the field of biology and medicine.

The methodological basis of life sciences research is perfectly described by the authors. The often sizeable chapters present issues on how to plan and conduct a scientific experiment, and the authors skillfully use the examples derived from clinical practice to reflect scientific dilemmas. There are truly exciting passages on the proper choice of a test that would adequately address these dilemmas.

The style of the book is rich and lively, not free from colloquial and informal language, which makes the reading much more interesting, engaging, and effortless. The authors make insightful comments on the lack of qualifications required to start scientific experimental research and on the common practice of neglecting the importance of so called negative results. They offer sensible and level-headed advice, advocating honesty and integrity in scientific approach as well as in the perception of one's role as a researcher.

Avoiding unnecessary shortcuts, pursuing integrity and fairness in thinking, asking truly honest questions, and finding reliable answers are all equally important prerogatives of a researcher. The book shows that the process of achieving scientific results requires time, honesty, and integrity of conduct and thought, thus becoming a true lesson in humility for young researchers.

The book is the first to bring such a detailed review of clinical drug trials, summarizing the advantages and disadvantages of each type of trial and their specific character, which is particularly valuable considering their popularity today.

A genuinely novel aspect of the book, which distinguishes it from other similar publications, is the fact of incorporating the concept of translational medicine, that is, of developing a model that will allow to apply the results of basic scientific research directly to clinical practice. This emphasizes the role of integrated educational programs at medical universities (which has long been the subject of extensive discussions) and proves that it is no longer an issue for the undefined future, but rather an immediate necessity.

The first volume, particularly the final chapters, examines the role of research conducted in animal models with its enormous benefits but also inescapable limitations. The authors also discuss the logistics of scientific data including collection, classification, assessment, and – most importantly – analysis, as well as hypothesis validation. Type I and II statistical errors are vividly described and statistical significance explained by elucidating some unknown facts, for example, by juxtaposing it with clinical significance.

The second volume describes the meticulous process of constructing a scientific paper itself: what constitutes a scientific publication, what is a scientific value of various types of publications, and what is the importance of proper peer review. For the first time, the structure of a scientific paper has been so meticulously described and

Correspondence to:
prof. Wojciech Kozubski, MD,
PhD, Katedra i Klinika Neurologii,
Uniwersytet Medyczny
im. K. Marcinkowskiego,
ul. S. Przybyszewskiego 49, 60-355
Poznań, phone: +48-61-867-98-87,
fax: +48-61-869-16-97,
e-mail: wkozubski@ump.edu.pl
Received: January 28, 2012.
Accepted: January 28, 2012.
Pol Arch Med Wewn. 2012;
122 (3): 125-126
Copyright by Medycyna Praktyczna,
Kraków 2012

the Introduction, Methods, Results and Discussion (IMRAD) system discussed so skillfully and with such a great attention to detail. Practical remarks on the graphic presentation of the results are particularly valuable. All researchers, not only young scientists, will also appreciate other practical comments such as those concerning the review process, criteria for publication, manuscript revision, and correspondence with the board. Again, not only beginners but all those who are perceived by society as “science makers”, should draw inspiration from this book to remain humble and have more realistic view of their limitations.

The authors offer practical advice on how to present the results not only as a paper but also in the form of an elegant and effective poster or oral presentation. They warn against information overload and recommend a set of rules including respect for the audience, partnership in presenting the story, and acknowledging the audience as a competent listener; they suggest that a lively discussion may sometimes be a more efficient way to convey the message than an *ex cathedra* lecture. The reader is then introduced to the subject of scientific error occurring in research and in publications, its most common types and causes, and the ways to avoid it. Finally, information on calculating the impact factor of a scientific paper as well as discussion of copyright, plagiarism and autoplagerism, scientific misconduct, and publishing ethics complete the second volume and the entire book.

There is, however, a surprise bonus chapter at the very end of the book, namely, a supplement with a catchy title “How to be successful in science?” with the famous quote from Confucius: “Choose a job you love and you will never have to work a day in your life” – and I join with the authors in wishing such a wonderful future to all aspiring scientists.

Note The book is available only in Polish. The review in Polish is available online at the journal’s website: www.pamw.pl.