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BOOK REVIEW

A useful guide to writing biomedical research

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Samiran Nundy, Atul Kakar, Zulfiqar A Bhutta. *How to Practice Academic Medicine and Publish from Developing Countries? A Practical Guide*, Springer; 2022. 465 pgs, ebook ISBN: 978-981-16-5248-6 (Open Access).

My first question when I saw the book was: is this affordable for poor researchers in developing countries?

It turned out to be open access, though published by Springer! Since it cannot be a gesture of goodwill from Springer towards researchers in developing countries, the authors may have paid to make it open access.

The book has 48 chapters organised into ten parts, with most chapter headings and subheads formulated as questions. Some chapter headings were not really questions, but, like the title of the book, had question marks. I disregarded that. As a reader, what was more important was that the chapters and subheads were hyperlinked; so the reader can find the answer to the question that attracted them, at just a click.

After scanning the Table of Contents, spread over 22 pages, I was satisfied that it would be a treat to read the book. In the foreword by Richard Smith, an editor at the British Medical Journal from 1979 and Chief Editor from 1991 for 15 years, he cautions: "you can never learn about research from reading about it: you need to do it"

Hence, there is need for such a book to catalyse and facilitate research in institutions involved in medical education,

especially those in developing countries. The reasons are clearly spelt out under the heading, *Why this book?*

First: 90% of the money spent annually, worldwide, on medical research targets diseases that affect only 10% of the world's population. Second: though there are 579 academic medical institutions in India, 57% have not published a single article in indexed journals between 2005 and 2014. So, the authors argue, there is indeed a need for developing countries to start researching diseases that matter most to them.

Aptly, the book starts with the link between the social determinants of health and the role of academic research. There is only one chapter in Part I of the practical guide, but it sets the tone of social commitment in the practice of medicine, in teaching and in research.

Part II, titled *Background*, deals with the need for research, the obstacles in publishing, the need for mentors to overcome the obstacles and the present status of research in Latin America, Africa and Asia. This set of five chapters is motivational and ends with a call for collaborations in research.

Part III titled 'How to Plan a Study?', contains the real meat of the book. For readers already convinced about the need to do research, the hyperlink to the third part will save some time.

The first chapter in this part tells you how to formulate a relevant and productive question, and warns of the pitfalls of bad research questions.

The next chapter is on types of study design: observational, descriptive, epidemiological, ecological, case control, cohort, cross sectional, experimental studies, and randomised controlled trials, as well as standards of research reporting. From this chapter onwards, serious researchers will get many important and helpful pointers.

The third chapter in this part, which is Chapter 9 as per the contents page, deals with the concept of sample size, the principles involved in selecting sample size and useful digital tools for the purpose. This is followed by a chapter on

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medical biostatistics and another on the applications of biostatistics in various types of study designs. These two chapters are worth reading twice because most medical students do not have an adequate background in biostatistics, a lacuna that is, unfortunately, often detected at the end of their research work. These two chapters give only an overview of the requirements. Perhaps the need to be brief kept the authors from spelling out more details. Researchers might like to pursue the subject further by delving into the references provided at the end of each chapter.

In this part, one of the chapters is on writing research proposals. There is some overlap with topics mentioned earlier — study design, randomisation, etc. However, the content is presented from a different point of view. The issue of ethics, is introduced here, but is dealt with more extensively in a later chapter. Normally, I do not like such redundancy but, since the chapters have independent digital object identifiers (DOI) and can be accessed individually, the repetition is useful. To paraphrase the third law of library science by S. R. Ranganathan — every chapter, its reader. I was impressed by this strategy used by the authors.

So, for instance, the next chapter on ethics in research, may only be useful to biomedical researchers. But Part IV, *How to Write an Original Research Paper*, containing 12 chapters on the writing of a research paper, has many tips that are useful for researchers in other fields as well. Individual chapters deal with issues related to authorship, writing abstracts, titles, introductions, review of literature, materials and methods, results, citing references, illustrations, and plagiarism, as well as issues related to language and syntax. Consulting these chapters in detail, when writing each part of a paper, is recommended, especially for early career researchers.

Part V deals with other types of articles in journals: editorials, letters to the editor, case studies and various types of reviews. While the chapter on writing case studies is useful to every practising doctor, biomedical researchers on editorial boards of journals need to read the chapter on writing editorials. By now, I hope that readers of this book review will appreciate why the chapters have independent DOIs and are free to access.

Part VI, *After the Paper is Written*, has five chapters. The first chapter focuses on choosing the journal for publication, which most researchers do not consider when submitting a manuscript. So this is a chapter that you can often return to, when each paper is ready for submission, till it becomes a habit to consider all the factors involved in the decision.

The process after submission is covered in the next chapter. Nail biting anxieties can be allayed if we recognise that journals follow a process before accepting or rejecting submissions. This is followed by one on peer review — the process which delay publication of many papers and creates headaches for both authors and editors. Besides explaining the various factors leading to rejection, the chapter also offers

guidance to potential peer reviewers, and points the reader towards preprints and new developments that may help overcome the biggest bottleneck in research publication.

The next chapter plays the role of agony aunt. Dejection due to rejection can be reduced by reading this chapter before writing a paper and again, immediately after submission. If you are productive in research, rejection, (of even well written and important papers), is an eventuality that you must anticipate.

Chapter 34, while relevant to researchers in other fields, is a must read for administrators of research and university authorities. The chapter dispels confusion and misinterpretation of measures such as citations, impact factor and h-index; and introduces the Eigen factor score, PageRank index, source normalised impact per paper, plum analytics and Altmetrics – the new kids on the block.

Chapter 35, the first in Part VII (*What Else You Should Know about Publication?*), contains advice to diverse target groups: those who are considering paying for publishing, those who want to get more funds for research and those who want to make profits by publishing. Thankfully, all these subsections can be accessed through hyperlinks. The authors seem to extend Ranganathan's Law of Library Science to a new level: every subsection, its reader.

Chapter 36 is for those who want to start a medical journal. But one should warn readers that it is not comprehensive. So please do not be tempted to start a journal based only on the tips given in the chapter alone.

Part VIII goes beyond publishing to poster and oral presentation in conferences, skills necessary for researchers. Feedback on poster and oral presentations received during conferences is often both helpful and kinder than that from peer reviewers of our papers. These chapters, while not directly connected to publishing in journals, are definitely a part of the practice of academic medicine, besides which, some conferences do publish the proceedings.

Similarly, Part IX, *Education, Planning and Execution*, may appear to be tangential to the book's main topic. Yet, bedside teaching, the topic for chapter 39, is a necessary, but often neglected, component of academic medicine in some developing countries. Chapter 40 is on e-learning. The Covid-19 pandemic had created a situation that necessitated the emergence and development of various platforms for e-learning, and this chapter complements and contrasts with the stress laid on bedside teaching in the earlier chapter. Medical educators may do well to consult these chapters and choose from the various digital tools for blending e-learning with their face-to-face lectures and demonstrations.

The chapters that follow, focusing on learning objectives and evaluation, on preparing for lectures, on the why and how of problem-based learning, and on conducting journal

clubs, are directed at educators and mentors of the next generation doctor-researchers.

The last part, titled *Other Topics*, deals with topics that are relevant to doctors who would like to participate in knowledge creation. The first chapter examines issues related to creating and maintaining medical records and underlines the usefulness of well-kept records. Given that the records can now be in digital form, their use in research, hospital administration and audit has become easier. This chapter connects well to the next: *Clinical Audit*. The rigour that audits bring to (force upon?) clinical practice is immeasurable. Yet most hospitals in developing countries do not pay much attention to them and fear subjecting themselves to audits. This chapter clarifies the issues and reduces anxieties associated with clinical audits.

In recent years, the number of clinical trials has increased, even in developing countries. Since opportunities have increased, many jump into the fray without adequate understanding of the processes. Chapter 47, *Clinical Drug Trials*, spells out the issues involved, clarifies the distinctions between various stages of clinical trials and post marketing studies. For developing countries with a large number of medical professionals who are comfortable with English, the authors stress that there is a need to step up involvement in clinical trials.

The last chapter, chapter 48, goes back to the issue of ethics, but now in the context of genetics research. While genetic disorders outnumber communicable diseases, research in human genetics is often embroiled in controversies. The chapter provides important and relevant advice to doctors embarking on research in genetics.

Overall, the whole book is extremely useful, some chapters more than others depending on the readers' needs. Its value, however, is marred by the many mistakes in the version I read. I was alerted initially by the unnecessary question marks. Spelling mistakes, mistakes in grammar and syntax (one even on the chapter that dealt with syntax), problems in the layout of text etc are clear indicators that the publisher (Springer) is careless about what is published.

I stumbled on the problem first on page 6 on the word 'curricul a' with a space between 'l' and 'a'. I disregarded it as a problem created during layout. Then in a table on page 25, I read: "20 August 1987, Secunderabad, Ross made the landmark discovery of transmission of malaria..." though it says in the earlier column that he died 50 years earlier. I smiled and moved on. By the time I saw 'Ledor and Manager' instead of Leader and Manager in the graphic on page 370, I was ready for more such spelling mistakes.

But the unwary reader may be misled or confused. In chapter 18, the practical guide asks in a sub-head: Which are the various search engines that I might find useful? And then

answers: "There are multiple literature sources include online databases like PubMed and MEDLINE from the USA's National Library of Medicine, Thomson Reuters, EMBASE, CINAHL, the HINARI programme of the WHO, CABI, Google Scholar, Cochrane Library, Index Copernicus, and Indian Medlars". Besides the lack of distinction between search engines and databases, the authors confuse Thomson Reuters, a company that once owned Web of Science, with the database itself!

In chapter 40, I had to struggle a bit when I read "Blending learning is an educational method...". I interpreted it as "Blended learning is..." and continued. When in another chapter I read that commonly used platforms for webinars are "Zoom, Microsoft, blue jeans, GoToMeeting, ...", I mentally inserted the word 'Team' after Microsoft and gave up trying to understand what 'blue jeans' meant in this context. I went on reading to find "Many online free portals offer academic courses that are getting accepted among younger generation. One of the sites is the Massive Open Online Course". Obviously, the authors were unaware of the meaning of MOOCs and the distinction between websites and portals.

It is evident that the authors are teachers and have taught the topics using PowerPoint presentations (PPTs). While PPTs are useful as a guide for formulating narrative text, quite often, the bullet points often remain as such in the book. Though this reduces the effort for the authors, it increases the effort for readers.

Moreover, while teaching, we can get away with some transient mistakes inflicted on unsuspecting students, but not in print that is subject to critical reflection. For example, in the *Acknowledgements*, just after the *Foreword*, it says that the three authors are actually editors and that there are contributions by 11 others; but neither the cover nor the title page indicate this. Again, after the *Contents* pages, there are two pages of introductions to three people with the title, "Authors". The book would have been better if the editors had themselves practised the guidance offered in the chapters of the practical guide.

There are quite a few cartoons in the book, which are irrelevant and not humorous. If the book is to be printed, the colourful cartoons will only add to the costs and bring down the serious tone of the book.

Though the authors target the book at underdeveloped countries, and, more specifically South Asian countries, it is highly India-centric.

Such blemishes apart, I am grateful to the authors for undertaking the mammoth effort of bringing out such a comprehensive guide. However, before it is printed to adorn the library shelves of medical colleges, I hope it is revised and reformatted.