

FIFTH EDITION

Health Sciences Literature Review Made Easy

THE MATRIX METHOD

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Dedication

This book is dedicated to my husband, Bill; our adult children, Zandy and Libby; our children-in-law, Heidi and Lee; our grandchildren, Hayden and Liam Garrard and Henry and Helen Glascoe; and our energetic canine companion, Sophie.

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Preface

Health Sciences Literature Review Made Easy: The Matrix Method, Fifth Edition has a number of additions and changes. Here is a summary:

- **Research Synthesis:** Chapter 1 has been expanded, with a more detailed discussion of the research synthesis field, especially the guidelines for reporting better studies and the guidelines for expert-led reviews. Also included are websites to help students stay up to date in future developments in the field of research synthesis.
- **Web-Based Tutorials:** In Chapter 2 under “Citations, References, Bibliographies,” I provided instructions for accessing web-based tutorials on the use of APA and AMA styles of citation for almost any type of reference needed in writing a synthesis of the literature.
- **PRISMA Flowchart:** The use of the PRISMA Flowchart of Number of Documents from Initiation to Completion of Review has been emphasized in Chapter 1 and has become an important complement to the Matrix Method in Chapters 4 and 6.
- **Exercises for Student Review:** A new section, “What You Should Know or Be Able to Do by the End of This Chapter,” has been added at the end of Chapters 1 through 6. These could serve as faculty-assigned exercises or be used by students either individually or in study groups.
- **Master Folder:** I modified the label, Lit Review Master Folder, which I now call the Master Folder. I also clarified how to better label the Master Folders if the reader has more than one. This change was made throughout the book.
- **Organizing the Folders:** In Chapters 3 through 6, I have a section on how to organize each folder: Paper Trail Folder, Documents Folder, Review

Matrix Folder, and Synthesis Folder, all stored in the Master Folder. This should help readers better organize their own files.

- **Writing the Synthesis:** I expanded Chapter 6 on how to write a synthesis of the literature. There is also a new section on papers published in nursing journals of a research synthesis in Chapter 6 based on publications in the peer-reviewed literature that used both the Matrix Method and an adaptation of the PRISMA Flowchart of documents from initiation to completion of review. These three publications are excellent examples that can be used by students to guide their own preparation of a synthesis.
- **More Hints and Examples:** Throughout Chapters 1 through 6, I added more hints to help students with practical advice. Each hint is in a box to help easily identify them.
- **Caroline's Quest:** These descriptions about the process of using the Matrix Method in Chapters 1 through 6 have been brought up to date by incorporating the additions and changes in the fifth edition.

The *Fourth Edition* included the creation of two new sections and some chapters were expanded, all of which are included in the *Fifth Edition*. The following were the new sections:

- **Methodological Review of the Literature:** This section in Chapter 2 has been completely rewritten for the *Fourth Edition*. A new visual, the Methods Map, was used for the first time in the book. The description of the Methods Map follows a logical progression in the analysis of a study: from statement of the initial question, through generation of a random sample, layout of the methodological design, final interpretation of statistical results, and application of answers to the initial research question.
- **Appendix C, Data Visualization: A Digital Exploration:** Not only is this a new topic for this book but how it is offered is also new. Jones & Bartlett Learning made it possible to offer this exciting topic in a digital environment. How else would you see the range of possibilities for data visualization if not in the environment for which it was intended? I urge you to go there now to begin this exploration. An Online Access Code unique to each copy of the book is required to access the Appendix and you can return repeatedly to Appendix C by using that code.

The *Third Edition* included the following revisions:

- **Electronic Basis:** The Matrix Method has been converted from a hard copy method (using three-ring notebooks and paper-based spreadsheets) to an entirely electronic basis (including computer folders and subfolders).

An appendix serves as a guide for setting up such files, and information is interwoven throughout all the chapters that describe this move to an electronic basis.

- **National Library of Medicine:** This edition describes the rapidly changing innovations in the National Library of Medicine infrastructure and the impact of these changes on how to review the literature in the health sciences.
- **Changes in the Field:** Different terms have been introduced to describe a review of the literature. These terms and how they compare to the kind of literature review described in this book are presented.

The purpose, scope, and emphasis of the text have not changed from the initial publication of this book to this *Fifth Edition*. They remain as follows:

- **Purpose:** The purpose of this book is to describe a practical and useful method for reviewing the literature, especially the scientific literature in the health sciences. The audience continues to be graduate or professional students who need a practical, step-by-step set of instructions for how to conduct a review of the literature. That is its fundamental goal.
- **Scope:** The scope of this text spans from beginning students to health professionals in the workplace. The methods for conducting a review of the literature apply to all major health professions, including public health, nursing, dentistry, medicine, pharmacy, veterinary medicine, and the allied health sciences.
- **Emphasis:** The emphasis in this text is on practical applications. My goal was and continues to be a method for actually conducting a review of the literature and preparing a narrative synthesis.

Acknowledgments

With each new edition of this text, I have had the pleasure of working with colleagues from my past and new experts, all of whom have been exciting to work with. For the *Fifth Edition*, I called on an old friend, Del Reed, PhD, who is a reference librarian in the University of Minnesota's Biomedical Library. He answered a variety of questions as I wrote this current edition. In writing the expanded section on research synthesis in Chapter 1, I had the help of colleagues from my past: Sue Duval, PhD, Associate Professor, School of Medicine, whose expertise is in meta analysis, and Mary Butler, PhD, Assistant Professor and Associate Director of the Minnesota Evidence-Based Practice Center in the School of Public Health; both are at the University of Minnesota. Finally, through the efforts of Rebecca Stephenson at Jones & Bartlett Learning, three reviewers in nursing volunteered to let me interview them about how they used the book and what they needed for the new edition. Thank you to Rodney Hicks, Professor, College of Graduate Nursing, Western University of Health Sciences, Pomona, California, and Cynthia S. Jacelon, PhD, Professor and Director of the PhD Program, School of Nursing, University of Massachusetts, Amherst, Massachusetts. What these two professors are doing to teach the science of research synthesis to their nursing students, including the use of the Matrix Method, is inspiring! I also appreciate the willingness of Jacqueline M. McGrath, PhD, Associate Dean, University of Connecticut School of Nursing, Storrs, Connecticut, to be interviewed; unfortunately, my travel schedule did not make this possible.

As this edition has moved from my writing to eventually the hands of readers, I am especially grateful to my editor, Rebecca Stephenson, for her guidance and active involvement in producing this *Fifth Edition* and to the associate editor,

Danielle Bessette. The extensive copyediting and proofreading of this *Fifth Edition* has been made possible by the very professional team led by Vanessa Richards, Production Editor, her colleague, Jamey O'Quinn, Rights & Media Specialist, both at Jones & Bartlett Learning, and Manjusha Chandrasekaran, Project Manager for the copyediting, typesetting, and proofreading stages of the book at S4Carlisle Publishing Services.

In the *Fourth Edition*, I greatly benefited from the advice and guidance of the Digital Learning Group (DLG) in the School of Public Health, University of Minnesota as I developed Appendix C. In particular, my guide throughout the development of the electronic aspects of this edition has been Bernadette Gloeb, MLS, an Instructional Designer in the DLG. She has provided inspiration, skills in transitioning from ideas to practical designs, and especially enthusiasm for the digital aspects of our work together.

The *Third Edition* reflected the many changes in tools researchers use to develop a literature review and how those tools are typically used. Some of the most dramatic changes have been in the resources available in university-based biomedical libraries.

In preparing the *Third Edition*, I had the good fortune to work with three dynamic biomedical librarians at the University of Minnesota Health Sciences Libraries in the preparation of these materials, and I want to gratefully acknowledge them: Chad Fennel, Lisa McGuire, and Del Reed. During the months that we met, they taught me a lot about the present and future resources in today's health sciences libraries, and I want to urge the readers of this text to seek out their own equivalent of this dynamic group of librarians at their own libraries.

The *Second Edition* and *Third Edition* would not have been possible without a *First Edition*, and I am continually grateful for the help from another librarian, Julie Kelly, at the University of Minnesota's Magrath Library. The improvements and additions to the *Second Edition* reflect input from all of these people; the errors are mine alone.

I also want to acknowledge the continued support and encouragement of my husband, Bill Garrard, in this endeavor, as well as that of our children, their spouses, and our grandchildren (and our canine companions).

My editors and their colleagues at Jones & Bartlett Learning have been patient and encouraging throughout the process of completion of the *Fifth Edition*, just as they were for the previous editions.

About the Author

Judith Garrard, PhD, retired from the University of Minnesota in January 2015, and is now a professor emeritus. During her 44 years as a faculty member in the health sciences and a professor in the School of Public Health at the University of Minnesota, she was a research psychologist with postgraduate training in epidemiology.

Her teaching and research activities were on a multidisciplinary basis throughout her career. For more than 35 years she taught graduate courses in research and program evaluation methods to students in public health, nursing, medicine, dentistry, veterinary medicine, and pharmacy, as well as those in education, psychology, and social work.

Dr. Garrard's research specialty was pharmacoepidemiology and patient outcomes, with a focus on prescription drug use by elderly people in the community, nursing homes, and assisted living facilities. She has authored or coauthored over 100 papers and reports, including peer-reviewed research papers on psychotropic drug use by elderly people. Over the past 10 years, she was one of four co-investigators in an NINDS-funded Research Center, based in the School of Pharmacy. Her specialty was epidemiological research on the use of antiepileptic drug use by nursing home residents, in collaboration with colleagues in pharmacy, neurology, and biostatistics. She has also been principal investigator or collaborator on numerous multidisciplinary research projects supported by NIH grants from the National Institute on Aging, National Institute for Neurological Diseases and Stroke, National Institute on Nursing, Agency for Health Care Policy Research, Health Care Financing Administration, Veterans Administration, and other granting agencies.

In 1990, Dr. Garrard received the Leonard M. Schuman Excellence in Teaching Award, and in 1991 a Career Research Award in social and behavioral geriatrics from the National Institute on Aging, NIH. In 1999, her book, *Health Sciences Literature Review Made Easy: The Matrix Method*, was published by Aspen Publications, Inc. The *Second*, *Third*, and *Fourth Editions* were published by Jones & Bartlett Learning in 2007, 2010, 2013, respectively; this is the *Fifth Edition*. She can be reached by email at the following address: jgarrard@umn.edu.