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## Book review

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# Concepts of Epidemiology: Integrating the Ideas, Theories, Principles and Methods of Epidemiology

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**Authors:** Raj Bhopal

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Disappointed with the texts used to teach introductory epidemiology to postgraduate students, Bhopal published his own book based on a review of 25 introductory texts in 2002.<sup>1</sup> In that well-received first edition, Bhopal explained the underpinning concepts of epidemiology using plain language and illustrative examples; he further aimed to reinforce understanding by including practice questions and answers at the end of each chapter.

The primary aim of this second edition was to improve upon the first in several areas. In contrast to the first edition, the author has expanded the question and answer sections and further simplified the language to accommodate those students whose main language is not English. He has also added introductions to particular fields, including genetic epidemiology and the purpose of reviews (narrative, systematic and meta-analysis).

As with the first edition, this 417-page second edition is divided into 10 chapters designed to be taught in 10-day introductory course at the postgraduate level. As a whole, the book explains the key concepts in epidemiology well and provides a background to a broader conceptual framework. At the start, we are introduced to the idea that the underlying premise of epidemiology asks us to consider why some people in a population are healthier than others; through an examination of the myriad determinants of health, practitioners in multiple disciplines can put into

practice what they know in order to improve the health of populations. Here the book would benefit from a population health framework diagram to show the different levels of factors that contribute to population health. An example of such a framework is the CIHR-IPPH Conceptual Framework of Population Health.<sup>2</sup>

The section on relative risk, odds ratios and attributable risk is well explained so that the reader can clearly understand the concepts of each measure and be able to calculate them accurately. The sample questions provide reinforcement of the concepts and their applications. Students will also find useful the glossary of terms although some important epidemiological terms, including “reliability” and “validity,” are missing.

For the most part, the material presented in the text is valid and well summarized and reported on. There are certain concepts, however, that require more accurate explanation. For example, Bhopal refers to “the epidemiological concept of sex [as] also a mix of biological and social” (p.9); it is more accurate to describe “sex” as the biological concept and “gender” as the social one. Similarly, he does not distinguish between “race” and “ethnicity.” In some parts of the book, concepts are introduced too generally, such as the overview of study designs in table format, which seems out of place. This may confuse students since overview tables are generally more useful after a detailed explanation. Further, the relationship between variables

and outcomes could have been more clearly explained using diagrams.

The section “How to keep your supervisor happy; or 9 tips on research writing” (p. 345) seems out of place being as it is in the chapter “Epidemiological study design and principles of data analysis.” The section is headed “Appendix 2,” which makes one think that it was intended for the back of the book, where it would be better placed. Also at the back of the book is the section on historical landmarks in epidemiology, which is traditionally placed at the beginning of epidemiology texts. The account of John Snow and the infamous Broad Street pump, for example, which resulted in his concluding that cholera was water-borne and not the result of “miasma,” is buried so far in the back of the book that it risks being overlooked altogether.

The discussion regarding population homogeneity and heterogeneity in the exploration of causes of disease (p.24) is quite strong, as is the section on research ethics. The social determinants of health are well described, particularly the discussion on income gradients and impact of societal factors on health. The concept of Rose’s “causes of causes,” which is not often discussed in introductory texts, is well explained and useful in the discussion of the determinants of health and complexity in the study of population health. Also, the section on genetic epidemiology is clearly written, making use of good examples to illustrate some of the more difficult concepts.

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Overall, the book uses language suitable for students with an intermediate level of English. It contributes to other works on the subject, especially the conceptual frameworks and theories that are the basis of epidemiology and many of the analytical approaches to which health researchers sometimes do not give enough consideration. Although there are some sections that could be improved upon, in general this second edition of *Concepts of Epidemiology* is one of the more comprehensive and effective texts for teaching introductory epidemiology to graduate students.

## References

1. Bhopal R. Which book? A comparative review of 25 introductory epidemiology textbooks. *J Epidemiol Community Health*. 1997; 51(6):612-22.
2. Etches V, Frank J, Di Ruggiero E, Manuel M. Measuring population health: a review of indicators. *Annu Rev Public Health*. 2006;27: 29-55.