

Historical reflections on the book *Epidemiologia & Saúde: Fundamentos, Métodos, Aplicações*

Reflexões históricas ao redor do livro *Epidemiologia & Saúde: Fundamentos, Métodos, Aplicações*

Reflexiones históricas acerca del libro *Epidemiologia & Saúde: Fundamentos, Métodos, Aplicações*

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Do we need a new epidemiology textbook in Portuguese? Would it not be easier to translate a book that epidemiology students have used for years in the United States?

Almeida Filho & Barreto have shown that the answer to the first question is “yes”. Their recently published *Epidemiologia & Saúde: Fundamentos, Métodos e Aplicações* ¹, consisting of seven parts, 63 sections, and comprising 98 collaborators, is different from all the epidemiology textbooks available in any of the languages I can read.

Briefly, the seven parts of the book cover:

- (1) History (of the world and of Brazil) and philosophy (epistemology, concept of risk);
- (2) Methodology (measurements of occurrence of health events and principal study designs);
- (3) Epidemiological data analysis (regression models, multilevel, structural, and complex approaches, and meta-analyses);
- (4) Applications of epidemiology by levels of organization (molecular, genetic, clinical, environmental, social, and “ethno-epidemiological”);
- (5) Applications of epidemiology across the life course (childhood, adolescence, adulthood, aging);
- (6) Specific health problems (infectious, respiratory, and cardiovascular diseases, cancer, violence, addiction, mental, oral, occupational, nutritional, reproductive and sexual);
- (7) Application of epidemiology to public health,

health policy and economics, and concluding with a section entitled *Panorama, Challenges, and Perspectives for a Brazilian Epidemiology*.

In this commentary, I wish to highlight the original nature of Almeida Filho & Barreto’s book by comparing their definition of epidemiology with several historical definitions. The oldest definition I know dates from 1866 (Table 1, item 1a). It’s by the Epidemiological Society of London, which grouped researchers from various fields in the fight against cholera. The Society’s definition emphasizes the population approach that characterizes epidemiology as opposed to physiology, pathology, and therapeutic medicine. In epidemiology, diseases are examined in the aggregate, in groups of cases. This definition also highlights the role of epidemiology in studying causal relations. It also mentions the application of new knowledge to the improvement of people’s health (Table 1, item 1b).

Such was the “pre-formal” definition of epidemiology in the 19th century. Paradoxically, Wade Hampton Frost, the first North American Professor of Epidemiology, did not adopt this definition. Elizabeth Fee retraced the evolution of Frost’s ideas concerning what constitutes epidemiology ². Frost initially included only acute infectious diseases (Table 1, item 2a). In 1919, shortly before beginning his work at the Johns Hopkins School of Hygiene and Public Health in Baltimore, Mary-

Table 1

Historical definitions of epidemiology.

Reference	Definition
Epidemiological Society of London (1866) ⁷	1a) "While the chief object of the other medical societies of the metropolis is the investigation of the physiological, pathological and therapeutic relations of diseases, that of the Epidemiological Society is specially the study of their etiological or causal relations and the relations of locality, climate and season, diet and occupation, etc., etc., on their rise, dissemination and continuance. Diseases are examined not so much in detail as in the aggregate; not in individual cases, but in groups or successions of cases; and not in one place only, but over wide and varied areas of observation". 1b) "The Epidemiological Society was instituted, in 1850, for the study of Epidemic and Endemic Diseases, with special reference to the investigation of (a) the various external or physical agencies, and the different conditions of life which favour their development or influence their character; and (b) the sanitary and hygienic measures best fitted to check, mitigate, or prevent them".
Wade Hampton Frost (Johns Hopkins School of Hygiene and Public Health, Baltimore, 1919-1937) ²	2a) "The natural history of the infectious diseases, with special reference to the circumstances and conditions which determine their occurrence in nature". (1919) 2b) "It is... good usage to speak of the epidemiology of tuberculosis and also to apply the term to the mass-phenomena of such non-infectious diseases as scurvy, but not to those of the so-called constitutional diseases, such as arteriosclerosis and nephritis". (1924) 2c) "Epidemiology comprises the whole of the unremitting effort being made to clarify the relation between the disease and disabilities which men suffer and their way of life". (1937)
Major Greenwood (1935) ³	3) "The study of disease, any disease, as a mass phenomenon".
Dictionary of Epidemiology (1983) ⁴	4) "Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and [my emphasis] the application of this study to the control of health problems".
Modern Epidemiology (1998) ⁵	5) "The ultimate goal of most epidemiologic research is the elaboration of causes that explain patterns of disease occurrence".
Epidemiologia & Saúde (2011) ¹	6) "The science that studies process relating health and illness in society; analyzing the population distribution and determinants of the risks of diseases, injuries, and health-related events; proposing specific measures for the prevention, control, or eradication of diseases, harm, and health problems, and for the protection, promotion, or recovery of individual and collective health; producing information and knowledge to support decision-making for the planning, management and evaluation of systems, programs, services, and actions related to health".

land, he wrote that epidemiology deals with "the natural history of the infectious diseases, with special reference to the circumstances and conditions which determine their occurrence in nature" ² (p. 134). His research soon included tuberculosis, a more chronic type of infectious disease. Five years after he began his work as head of epidemiology at Johns Hopkins, Frost expanded his definition to include other diseases, but not cardiovascular diseases or cancer (Table 1, item 2b). Finally, in 1937, a year before his death, Frost ² (p. 134) described "epidemiology as comprising the whole of the unremitting effort being made to clarify the relation between the disease and disabilities which men suffer and their way of life" (Table 1, item 2c).

Nevertheless, it was Major Greenwood, Frost's British counterpart, who provided a universal definition, albeit less rich than that of the Epidemiological Society of London. According to

Greenwood, epidemiology is "the study of disease, any disease, as a mass phenomenon" ³ (p. 15).

After World War II, a new generation consisting mainly of physicians embraced epidemiology as a way of promoting public health. Abraham Lilienfeld, head of Frost's department in the 1970s, stated that "without public health, there is no epidemiology". These epidemiologists had primarily social and sometimes political motivations. It is thus not odd that the "classical" definition of epidemiology in the first edition of Last's *Dictionary of Epidemiology* ⁴ had two components: to study the causes of diseases and to use such knowledge to improve people's health (Table 1, item 4).

The second part of Last's definition, which includes the relationship between epidemiology and public health, disappeared in the "modern" definition proposed by some authors, such as Rothman & Greenland ⁵ (Table 1, item 5). What about the definition proposed in *Epidemiologia e*

Saúde: Fundamentos, Métodos e Aplicações? The quote in Table 1 (item 6) shows clearly that the book takes a position more in line with the classical definition, linking etiological investigation to improvements in public health.

It would be interesting to know why Almeida Filho & Barreto did not embrace the “modern” definition. Perhaps because epidemiology and the foundations of public health developed simultaneously in Brazil and the connection between the two is thus obvious to everyone? Meanwhile, in Europe and the United States, “modern” epidemiology germinated in a context in which the foundations of public health could be considered political and social conquests, that is, as a structural component of society; in this context, epidemiology could be confined to a more specific role of etiological exploration. We shall see in the future whether the “Brazilian” definition becomes more “modern” or whether the “modern” definition approaches the “Brazilian” definition. I have a preference for the second option.

I think the most impressive aspect of *Epidemiologia e Saúde: Fundamentos, Métodos e Aplicações* is the authors’ encyclopedic ambition. The

book covers more areas than the *Handbook of Epidemiology*⁶, which has a thousand pages and costs US\$ 450. Can a project of such magnitude be conducted in a single country? Would Brazil alone, or for example the United States alone, have the necessary expertise to carry out such a project?

I understand that, *Epidemiologia e Saúde: Fundamentos, Métodos e Aplicações* is a handbook for teaching epidemiology in Brazil. Some chapters are only of local interest. But others are of universal interest. It may be possible to conceive an international, multilingual, modular handbook to which experts from each area in the entire world can contribute. It would be a huge endeavor to harmonize the concepts and nomenclature, but I believe it is worth the effort.

With its smooth balance between the epidemiology of causal investigation and the epidemiology of public health, the book edited by Almeida Filho & Barreto is more than an adaptation, in Portuguese, of the contents of existing handbooks. It offers the best concept for teaching epidemiology that I have seen in many years.

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