ADITUM
Enrich your Research

International Journal of Epidemiology and Public Health Research

Mini Review Article

Epidemiology Education

Naeima Houssein
https://orcid.org/0000-0002-5767-0879
*naeima.houssein@uob.edu.ly
Assistant Professor at the Department of Epidemiology, Faculty of Public Health, University of Benghazi, Libya.

Article Info

Received: April 27, 2025
Accepted: May 03, 2025
Published: May 07, 2025

***Corresponding author:** Naeima Houssein, Assistant Professor at the Department of Epidemiology, Faculty of Public Health, University of Benghazi, Libya.

Citation: Naeima Houssein. (2025) "Epidemiology Education". International Journal of Epidemiology and Public Health Research, 6(3); DOI: 10.61148/2836- 2810/IJEPHR/123

Abstract

Public health sectors over the word are facing substantial health challenges every day. Epidemiology is the basic science of public health and preventive medicine. There is a crucial need to develop education and training programs in epidemiology to meet the professional gap in health fields and address real-world public health problems. By revising a number of existing undergraduate programs in epidemiology in the world, an overlap observed in some courses related to the core public health courses and epidemiology. Effective epidemiology education programs are based on building knowledge on core competences for epidemiology as three sections including, epidemiologic methods and measures, branches of epidemiology, and supported courses. Clear classification of courses either in undergraduate or postgraduate level can enhance curriculum design. In addition, different teaching approaches and ongoing evaluation of the program are highly recommended. Therefore, effective epidemiology education programs require a carefully designed curriculum that integrates epidemiologic methodology and measures and their applications in different branches of epidemiology supported by biostatistics and health informatic skills.

Keywords: epidemiology, public health, curriculum, classification

Introduction:

Epidemiology is the basic science of public health and preventive medicine. It defined as study of the distribution and determinants of and health-related states among specified populations and the application of that study to the control of health problems1. Public Health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society2. Accordingly, the ultimate aim of epidemiology is prevention of diseases and promotion of health. To achieve this aim, its focus on four areas including disease causation, natural history of diseases, health status of population and evaluation of intervention. According to the epidemiologic assumption, human disease does not occur at random, there are patterns of occurrence in which some behavioral and environmental factors (exposures) increase the risk of acquiring or developing a particular disease among group of individuals. Additionally, human disease has causal and preventive factors these factors can be identified through systematic investigation of populations or group of individuals within a population in different places or at different times.

Therefore, the epidemiological approach is based on asking questions and making comparisons. Epidemiologists study health phenomena and disease patterns within populations to determine risk profiles and potential health-improvement targets. More importantly, they collaborate with other health care workers to implement population-level, health-related interventions[1].

Epidemiology Education:

Public health sectors over the word are facing substantial health challenges every day. There is a crucial need to develop education and training programs in epidemiology to meet the professional gap in health fields and address real-world public health problems. By revising a number of existing undergraduate programs in epidemiology in the world, an overlap observed in some courses related to the core public health courses and epidemiology. Figure 1 blew presents a proposed conceptional framework of curriculum design for undergraduate epidemiology education.

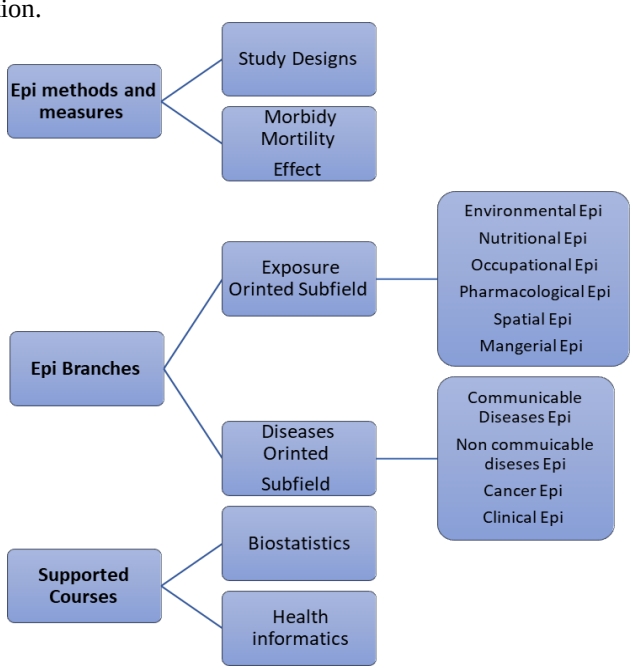

Figure 1: A conceptional framework of curriculum design for epidemiology education

The importance of each discipline in epidemiology curriculum is widely described elsewhere3,4,5. However, there is still overlap in most schools on how these courses are classified and organized for better learning outcomes. In my opinion, effective epidemiology education programs are based on building knowledge on core competences for epidemiology as three sections. First, the studies designs including the descriptive, analytic and experimental. in addition, epidemiologic measures including, measures of morbidity, mortality and measures of effects. Second, branches of epidemiology courses classified into two areas, exposure-oriented subfield and diseases-oriented subfield. The former is focusing on learning the effect of external factors on health such as environment studied by environmental epidemiology, the effect of occupation on health is studies by occupational epidemiology and so on. The latter is covering selected domains in medical practices including communicable and non-communicable diseases, further divisions may be organized to focus on special health problem for example cancer epidemiology or cardiovascular epidemiology. More subfields could be added such as maternal child heath epidemiology and social epidemiology and others, depending on the vision and mission of the course providers. By studying branches of epidemiology, the learners apply the basic knowledges they gained from the epidemiologic methods and measures. Third, integrating biostatistics and health informatics as supported competences, covering essential biostatistics methods and data management, which are essential for effective curriculum design in epidemiology education programs. Clear classification of courses either in undergraduate or postgraduate level can enhance curriculum design. In addition, different teaching methods and ongoing evaluation of the program are highly recommended.

Therefore, effective epidemiology education programs require a carefully designed curriculum that integrates epidemiologic methodology and measures and their applications in different branches of epidemiology supported by biostatistics and health informatic skills.

References:

1. Celentano, David D., (2019) "Gordis Epidemiology, 6th Edition". *textbooks for Students*. 367.

2. Friis, Robert H., Sellers, Thomas A. (2003). Epidemiology for Public Health Practice; 3rd Edition. Jones and Bartlett Publishers,

3. Traicoff, D., Suarez-Rangel, G., Espinosa-Wilkins, Y., Lopez, A., Diaz, A., & Cáceres, V. M. (2015) .Strong and Flexible: Developing a Three-Tiered Curriculum for the Regional Central America Field Epidemiology Training Program. *Pedagogy in Health Promotion*, *1*(2), 74–82. https://doi.org/10.1177/237337991557280

4. Petrusevych, T. V., & Zublenko, O. V. (2024) Peculiarities of training personnel resources of the public health system in the sphere of epidemiology. *Клінічна Та Профілактична Медицина*, *4*, 103–110. https://doi.org/10.31612/2616-4868.4.2024.14

5. Hebel, J. Richard and McCarter, Robert (2006) Study Guide to Epidemiology and Biostatistics, 6th Edition. Jones and Bartlett Publishers.