



Supporting epidemiological and public health research to promote public well-being

Samia BOUSSAA

Public Health and Epidemiology section editor, Sciences Methods and Technologies international journal (SciMeTech), s.boussaa@scimetech.com
ISPITS-Higher Institute of Nursing and Health Techniques, Ministry of Health and Social Protection, Rabat, Morocco

Received: 4 February 2025. **Revised:** 20 February 2025. **Published:** 26 February 2025

How to cite:

Samia BOUSSAA, "Supporting epidemiological and public health research to promote public well-being", Sciences Methods and Technologies International Journal (SciMeTech), Vol 1, Issue 1, p1-3

Abstract

Keywords:

Disease Prevention
Infectious Diseases
Non-Communicable Diseases
Parasitology and Medical entomology

Epidemiological and public health research plays a crucial role in understanding the determinants of health, preventing disease and improving healthcare systems. By identifying risk factors and disease trends, epidemiological research makes it possible to develop evidence-based prevention and intervention strategies. It is essential for responding to emerging health challenges, such as pandemics, antibiotic resistance and rising chronic diseases. In addition, public health research guides the development of health policies and promotes equity in care, by highlighting health disparities and proposing solutions adapted to vulnerable populations. Rigorous, multidisciplinary epidemiological research is therefore essential to improving the health of populations and strengthening the resilience of healthcare systems in the face of global threats.

I. Introduction

Epidemiology and public health are closely linked, as epidemiology provides the scientific tools needed to understand, prevent and control disease in populations. As a key public health discipline, it identifies risk factors, monitors disease trends and evaluates the effectiveness of health interventions (Bonita et al., 2006). Through observational and experimental studies, epidemiology helps to develop evidence-based public health policies, thereby improving the prevention and management of infectious and chronic diseases (Gordis, 2014). Consequently, an integrated approach between these two fields is essential for promoting health and reducing health inequalities on a global scale (Schneider, 2020).

Through this section, our journal highlights contemporary challenges facing populations and health systems worldwide, including emerging and reemerging diseases, cancers, vector-borne infections and pathologies linked to extreme environmental conditions. In addition, we are targeting epidemiological methodologies used to assess environmental impacts on health, while exploring solutions and public policies to prevent these risks, improve community resilience and reduce the health impact of global environmental changes.

These objectives aim to make this journal an essential resource for researchers, healthcare professionals, policy-makers and students, providing practical and scientific information to help them better understand healthcare challenges and solutions.

This section of the journal aims to provide readers with the knowledge and ideas they need to understand and exploit emerging phenomena, and enables researchers to share their findings and hypotheses and fuel multidisciplinary scientific discussions around health phenomena. This section is divided into sub-sections, each targeting a specific area.

II. Disease Prevention

Disease prevention is a fundamental pillar of public health, aimed at reducing the incidence and severity of disease through targeted interventions. It is divided into three levels: primary prevention, which seeks to avoid the onset

of disease through measures such as vaccination and the promotion of healthy lifestyles (Koplan et al., 2009); secondary prevention, which aims to detect disease early to improve the chances of treatment, for example through cancer screening (WHO, 2022a); and tertiary prevention, which concerns the management of chronic diseases to limit their complications and improve patients' quality of life (Friis & Sellers, 2021). An effective preventive approach relies on science-based strategies and collaboration between governments, healthcare professionals and civil society to reduce the global burden of disease.

III. Infectious Diseases

Infectious diseases, caused by pathogens such as bacteria, viruses, fungi and parasites, are a major public health issue worldwide. They can be transmitted by direct contact, through the air or water, or by biological vectors such as mosquitoes (Heymann, 2015). The prevention and control of infectious diseases are based on several strategies, including vaccination, hygiene, access to drinking water and appropriate antimicrobial treatments (Murray & Cohen, 2021). However, the emergence of antibiotic resistance and the appearance of new infections, such as the COVID-19 or Ebola pandemics, underline the need for continuous epidemiological surveillance and international cooperation to limit their spread (Fauci et al., 2020).

IV. Non-Communicable Diseases

Non-communicable diseases (NCDs) are chronic conditions that do not spread from person to person and are often the result of genetic, environmental and behavioural factors. The main NCDs include cardiovascular disease, cancer, diabetes and chronic respiratory diseases, which are the leading cause of death worldwide, contributing to around 74% of global deaths (WHO, 2022b). The main risk factors include smoking, poor diet, physical inactivity and excessive alcohol consumption (Gordon & Gulanick, 2020). The prevention and management of NCDs rely on multisectoral approaches, combining public health policies, medical interventions and the promotion of healthy lifestyles to reduce their impact and improve people's quality of life (Beaglehole et al., 2011).

V. Parasitology and Medical entomology

Parasitology and medical entomology are two essential public health disciplines, studying respectively the parasites and arthropod vectors responsible for human diseases. Medical parasitology is concerned with organisms such as protozoa (e.g. *Plasmodium* causing malaria) and helminths (e.g. *Schistosoma* responsible for bilharzia), which cause infections often linked to unfavourable socio-economic conditions (Roberts & Janovy, 2019). Medical entomology, on the other hand, focuses on insects and other arthropod vectors such as mosquitoes (*Anopheles* for malaria, *Aedes* for dengue fever and chikungunya) and ticks (*Ixodes* for Lyme disease) (Gullan & Cranston, 2020). The prevention and control of parasitic and vector-borne diseases rely on combined strategies, including improved hygiene, the use of insecticides, vaccination and epidemiological surveillance (WHO, 2023).

VI. Conclusion

Promoting the physical, mental and social well-being of the population requires close collaboration between researchers and practitioners and the promotion of action research. To this end, our journal provides a forum for the exchange and sharing of knowledge and expertise.

References

- Beaglehole, R., Bonita, R., Horton, R., Adams, C., Alleyne, G., Asaria, P., ... & Lancet NCD Action Group. (2011). Priority actions for the non-communicable disease crisis. *The Lancet*, 377(9775), 1438-1447.
- Bonita, R., Beaglehole, R., & Kjellström, T. (2006). *Basic Epidemiology*. World Health Organization.
- Fauci, A. S., Morens, D. M., & Lane, H. C. (2020). Emerging pandemics: Threats and preparedness. *Cell*, 183(4), 857-871.

- Friis, R. H., & Sellers, T. A. (2021). *Epidemiology for Public Health Practice*. Jones & Bartlett Learning.
- Gordis, L. (2014). *Epidemiology*. Elsevier Health Sciences.
- Gordon, N. F., & Gulanick, M. (2020). *Prevention and Treatment of Cardiovascular Disease: Integrating Lifestyle and Medical Approaches*. Springer.
- Gullan, P. J., & Cranston, P. S. (2020). *The Insects: An Outline of Entomology*. Wiley-Blackwell.
- Heymann, D. L. (2015). *Control of Communicable Diseases Manual*. American Public Health Association.
- Koplan, J. P., Bond, T. C., Merson, M. H., Reddy, K. S., Rodriguez, M. H., Sewankambo, N. K., & Wasserheit, J. N. (2009). Towards a common definition of global health. *The Lancet*, 373(9679), 1993-1995.
- Murray, P. R., & Cohen, J. (2021). *Infectious Diseases*. Elsevier.
- Roberts, L. S., & Janovy, J. (2019). *Foundations of Parasitology*. McGraw-Hill.
- Schneider, M. J. (2020). *Introduction to Public Health*. Jones & Bartlett Learning.
- World Health Organization (WHO). (2023). *Vector-borne diseases*. Retrieved from <https://www.who.int>.
- World Health Organization (WHO). (2022a). *Screening and early detection*. Retrieved from <https://www.who.int>.
- World Health Organization (WHO). (2022b). *Noncommunicable diseases*. Retrieved from <https://www.who.int>.