Dr. Fred Kapaya

Student ID:

UD76152HPU85336

COURSE NAME:

Evidence Based Public Health and Decision Making

Assignment Title:

Importance of sound Scientific Evidence in Public Health Practice

ATLANTIC INTERNATIONAL UNIVERSITY

May/2022

TABLE OF CONTENTS

1.0 Introduction

Evidence-Based Public Health and Decision Making continues to gain prominence in the ever changing health environment due to the increasing negative impact of biological, societal, geological, hydro-meteorological, extra-terrestrial and technological hazards. These hazards are the major causes of disasters resulting in climate extremes and ultimately affect people, ecosystems and economies(UNDRR, 2020). Governments throughout the world are faced with a daunting task of ensuring a healthy population in the midst of other socio-economic challenges compounded by limited resources. The situation is direr in the developing world.

To ensure optimal use of the limited resources, public health managers make use of scientific evidence to prioritize management decisions, developing policies and implementing programs. However, policy makers are sometimes faced with immense pressure for urgent action before sound scientific evidence is available. In most of these cases, they end up using anecdotal evidence to develop policies and programs (Brownson, Fielding and Maylahn, 2009)(Jenicek, 1997; Bompangue, 2014)(Brownson *et al.*, 1999). Therefore, provision of timely, adequate and sound scientific evidence is essential for public health decision making. Public health service providers, users of the service, policy makers and public health practitioners must all play a role in this important process. This is a major fundamental principle of public health policy, emphasizing the need for effective interventions that are based on sound evidence against the backdrop of the many public health challenges(Bhattacharya and Bhatt, 2017).

2.0 Definitions and fundamental concepts of Evidence Based Public Health and Decision Making

Evidence Based Public Health and Decision Making plays a critical role of strengthening national health systems through development of effective public health interventions. It is the process of integrating science based interventions with community preferences to improve the health of populations. Therefore, combining scientific evidence, resources and context is key in decision making. This ensures ration allocation of resources to the health needs of populations(Wahabi *et al.*, 2015)(Brownson, Fielding and Maylahn, 2013).

2.1 What is Evidence Based Public Health and Decision Making?

Evidence Based Public Health and Decision Making is defined as "the explicit application of existing best evidence to develop, implement and evaluate effective health policies and programs"(Brownson, 2011)(Jenicek, 1997).

Health care decision makers are now more interested in using high quality scientific evidence to support appropriate health policy choices. The aim is to ensure prudent use of limited resources for optimal quality health care to communities and populations.

Evidence is defined as "*the available body of facts or information showing whether a proposition or belief is true or valid."* It's a form of data used in decision making(Brownson, Fielding and Maylahn, 2009). In Public health, evidence often

involves a complex cycle of observations, theory and experiment. Lack of evidence runs the risk of making critical public health decisions based on anecdotal information. It is essential to get the best evidence available rather than waiting for the best evidence possible to making public health decisions.

2.2 Attributes of Evidence Based Public Health

EBPH has a number of attributes including:

- Use of best available evidence to make decisions
- Application of program planning framework
- Community engagement during assessments and decision making
- Methodical use of information systems
- Evaluating the evidence
- Disseminating the findings to stakeholders and decision makers
- Combining scientific skills, effective communication, common sense and political acuity in making decisions

2.3 Analytic Tools and Processes for Evaluating Evidence

There are several tools and planning processes available to evaluate evidence for public health action. Some of these are:

i. Meta-Analysis

This a quantitative process which integrates findings of individual research studies through methodical and structured analysis. The unity of analysis is the study results. Meta-analysis forms the most essential policy-related research method for evaluating

evidence. Using systematic and structured methods when reviewing and analyzing findings of research studies limits bias and thereby helps to provide more reliable and quality results or information for use in public health decision making. This is made possible through use of checklists that allows understanding of the local context in which the study was conducted and how it could be adapted for successful implementation.

ii. Public Health Surveillance

Public Health Surveillance is a critical tool in Evidence-Based Public Health and Decision making. It is defined as "*the ongoing systematic identification, collection, collation, analysis and interpretation of disease occurrence and public health event data to take timely and robust action and includes the timely dissemination of the resulting information to public health managers and decision makers for effective and appropriate action*" (Akukwe and Popejoy, 2013).

It is essential for planning, implementation, monitoring and evaluation of public health practice. The tool can be used to estimate the health status of the populations and measure the need for public health interventions. Ultimately public health surveillance empowers decision makers to improve public health practice by providing timely and reliable data for targeting resources and evaluating public health interventions and programs. A good example is the ongoing COVID-19 pandemic which has highlighted the critical role that surveillance plays in providing useful information for effective public health actions and measures to protect populations. We are constantly and effectively monitoring the global trends and at the same time evaluating and adjusting the public

health interventions so as to control the pandemic. Another good example is water quality surveillance by water utility companies. This is done to ensure that water that is being distributed to the community for consumption meets the standards prescribed by law. Many countries and stakeholders have developed robust programs using water quality surveillance data. Therefore, it is very important that a strong and well supported public health surveillance system is established.

iii. Community Assessments

This is a systematic process used to identify the needs and resources to improve the health of a community(Rabarison, Timsina and Mays, 2015). There are three types of community assessments:

a) Health assessment—this describes the health status of the community. Community health status is determined by environmental, behavioural and social characteristics in that community
b) Needs Assessment—the needs related to the actual or probable problem. Needs assessments is essential for decision making, resource allocation, and ultimately evaluating interventions
c) Capacity Assessment—identifies existing health resources (human, financial, infrastructure, equipment etc.) to enable strategy development and establish baseline measures for evaluation.

Therefore, community assessments provide a wealth of information which can be used for developing effective public health interventions to improve the health of the population. Through these robust assessments, it is a well-known fact that Sub-Sahara

Africa has the highest disease burden which has been made worse by weak health systems, poverty and shortage of critical mass of skilled human resources. In 2003, the U.S Government under the Bush administration established an initiative called the President's Emergency Plan for AIDS Relief (PEPFAR) focused primarily on Africa(WHO, 2018). This has been one of the most successful interventions with millions of people benefiting from the initiative and ultimately improving population health.

iv. Economic Evaluation

Economic evaluation is an essential element of evidence-based decision making in public health practice particularly amidst limited funds. It helps communities and decision makers to identify, measure and compare activities with the impact, scalability and sustainability for optimal population health(Rabarison *et al.*, 2015)(Wahabi *et al.*, 2015). Economic evaluation involves the examination of program incentives and results, measure of service provision and utilization. The understanding and use of economic evidence in public health decision making is key. Therefore, public health managers and policy makers need to understand all the available evidence, the target population, the impact of the intervention and the estimated cost(Rabarison *et al.*, 2015).

Although there are several types of economic evaluation, Cost Effectiveness Analysis (CEA) is of particular benefit in public health practice. However, measuring cost effectiveness is always very challenging in public health practice.

v. Examining Scientific Evidence by use of Expert Panels

One of the ways used to obtain scientific evidence for evidence based public health decision making is the use of a well constituted panel of experts. These experts examine scientific studies/data using agreed criteria and determine how suitable the evidence is to be used in formulating public health policies and interventions. The aim is to be able to generate evidence that is cost effective and responsive to the needs of the target population. They gather several pieces of literature and scientific studies, thoroughly analyze, interpret and provide recommendations which public health decision and policy makers can consider when making decisions. A well conducted peer review of scientific studies can provide a wealth of evidence to guide public health policies and interventions.

2.4 When and what evidence is adequate for Action

Deciding what and when evidence is sufficient for public health action is often challenging(Rychetnik *et al.*, 2006). This is barrier is usually overcome by looking at the available evidence in two levels:

a) **Level one**—involves linking the value of a particular identified health condition to known or perceived preventable risk factor(s). To illustrate this, Public health practitioners should consider the available research evidence that shows how the impact on mortality and morbidity including incidence, prevalence and disability due COVID-19 can be reduced through mass immunizations. Immunization is the

intervention which is deemed effective to reduce mortality and morbidity due to COVID-19.

b) **Level two**—here we assess what strategies should be used to ensure that the intervention is effective. In this instance, we determine and/or adopt strategies that are implementable and cost effective. At this stage, the evidence is assessed for relevance, appropriateness, applicability and acceptability so as to justify the decision. Both internal and external meticulous review processes are essential to ensure validity of the decision.
c) **Level three**—this is the final stage and involves the application of the evidence. Once the evidence is correctly analysed and interpreted, it is used to support the decision. This is a critical stage because all the various sources of evidence are then weighted based on some established criteria by experts. To comprehensively do this, both internal and external contextual factors are considered. The evidence with the highest priority is then applied to support decision making.

In both levels, it is essential to collect the full range of evidence that focuses on consistent findings from well conducted research studies. Thereafter, Public Health Practitioners and policy makers should take into account all the considerations about the risks and benefits of the different actions. This scientific evidence is then complemented by the social, economic, cultural and political factors(Malekinejad *et al.*, 2018)(Bhattacharya and Bhatt, 2017)(Wahabi *et al.*, 2015). This means effective decision making should combine scientific evidence, environmental factors,

population characteristics including needs, values and preferences, and resources (human & financial) as illustrated in Figure 1 below.

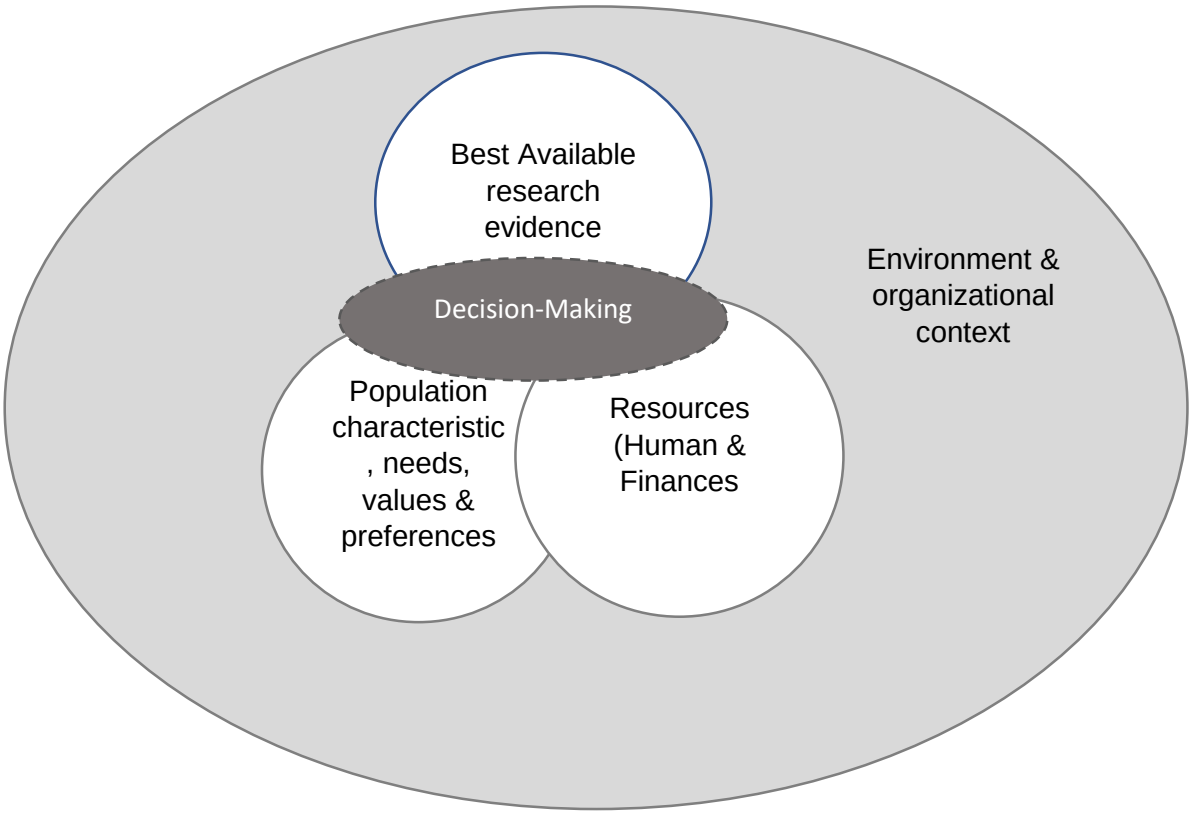

Figure 1: Domains that influence decision making. Adapted from Spring et al.

2.5 Stages and Processes of Evidence Based Public Health and Decision Making

In order to ensure enhanced use of evidence in decision making, a framework of the sequence of stages is used. These stages are useful in solving the various public health policy decisions. The process involves a series of feedback loops and are consistent with other planning models. The framework promotes engagement of

public health practitioners and other multidisciplinary teams in problem solving. This is summarized below in Figure 2:

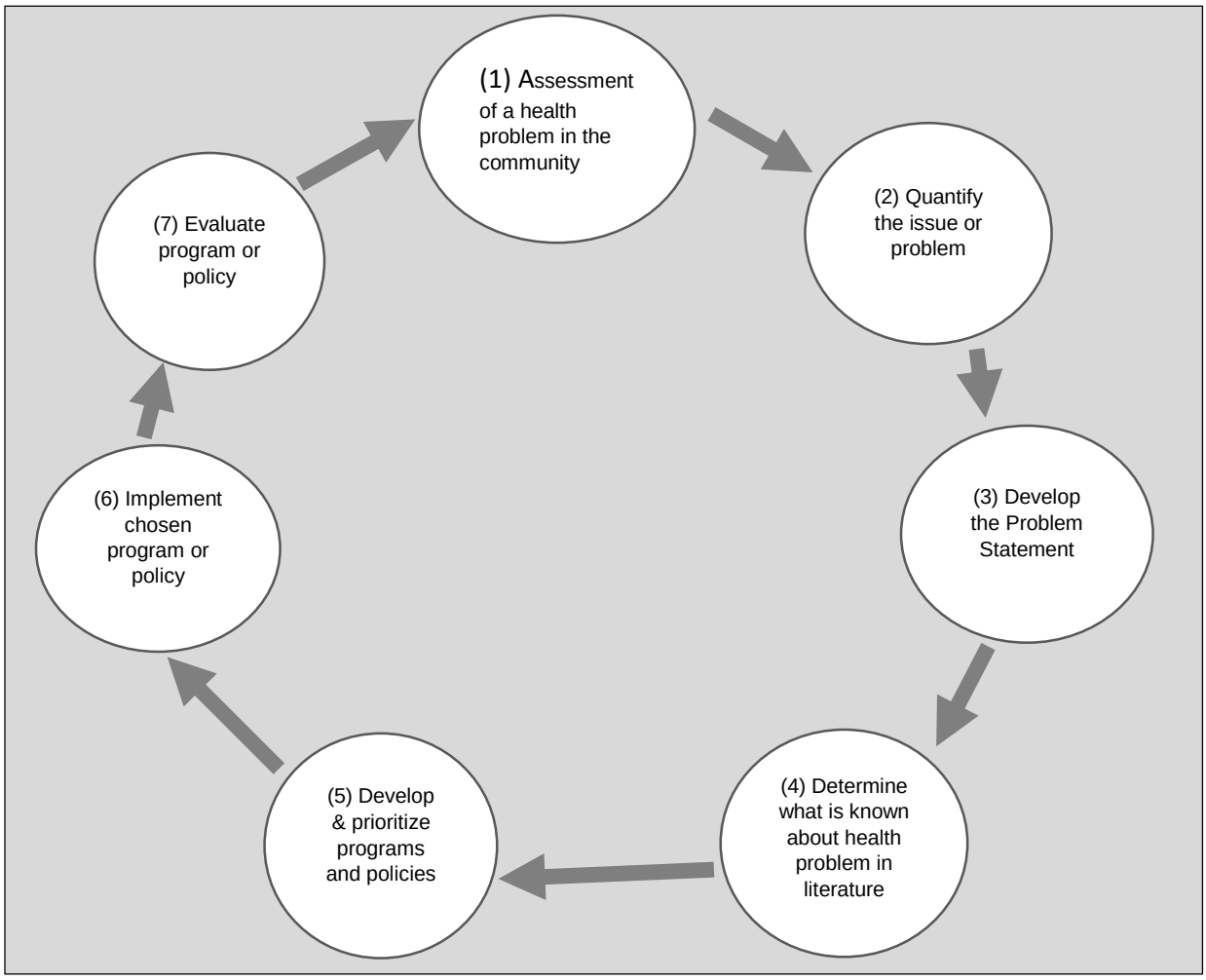

Figure 2: Framework for evidence-based public health and decision making. Adapted from Brownson et al

3.0 Enhancing Implementation of Evidence Based Public Health and Decision Making

Several challenges or barriers may impede the successful implementation of Evidence-based public health decision making. As a public health practitioner and decision maker, it is important to understand the major factors that influence evidence based decsion making in public health practice(Jacobs *et al.*, 2010). A very good public health program or intervention may be developed but may result in very small positive changes due to challenges in implementaion. These factors include:

3.1 Leadership

To succesfully implement an effective public health intervention, strong Governments, key co-operating partners and agency leadership support is essential. They provide the required resources for the successful implementation of the intervention. Strong engagement and advocacy is critical and should be started early so that they can own the proposed program or intervention.

3.2 Organizational Structure

Organizational management differs from one organization to the other and from one area to the other. Governments tend to put in strict and stringent measures which must be adhered to by all employees in the organization. Sometimes, public health interventions or actions are developed and require immediate implemention. However, strict procedures and systems such as recruitment of staff, procurement of enablers and other requirements are expected to be followed. Occasionally, a weaver may be given

after proper justification. These result in delays to implement the program or intervention and may not produce the indended benefits. Therefore, it is important to time implementation taking into account the required procedures and if possible early engagement for special consideration may help. In addition, involvement of co-operating partners with flexible systems may also help.

3.3 Political Challenges

Politicians main goal is to sell their manifesto, compete with opponents and advocate for more support in order to get re-elected. They often make decisions based on pressure and preference of the electorates at the expense of expert scientific evidence. The pressure for re-election may cause them to use anecdotal evidence and proposals from pressure groups. It is therefore necessary that widespread multisectoral engagement involving politicians, the community and pressure groups at the stage of dissemination of the scientific evidence is done to solicit their unwavering support.

3.4 Funding Challenges

Most governments and agencies are faced with increasing competing needs with limited resources. Funds released are usually tied to a specific program. This may prove challenging if the intervention was initially not budgeted for. The best way is to engagement the key ministries responsible for a specific intervention to adjust their plans/programs and include the identified intervention. Further, the intervention can also nbe integrated in other similar programs and given the required attention during the implementation.

3.5 Knowledge Gaps

In order to successfully develop and implement an intervention, there are specific skills that are prescribed. In most cases, these skills are limited. Therefore, it is important to impart skills and knowledge in a large poor of public health health practitioners about scientific literature review, program evaluation including the seven stage framework of Evidence-Based Public Health.

3.6 Cultural and Geographical Differences

Some interventions are either adopted or adapted from other areas. These areas may not be similar and thus understanding the cultural and geographical contexts in which they were first developed and implemented is critical. This will enable you to make decsions of whether the evidence can be generalized or can be modified to suit your target audience with different cultural and geographical settings.

4.0 Conclusion

Evidence-Based Public Health and Decision Making is essential in public health practice. In the world of ever increasing demand for better health services amidst limited resources, sceintific evidence to support prioritization for effective public health decision making is essential. To successfully accomplish this, public health professionals should acquire the necessary skills and knowledge in Evidence Based Public Health which is a blend of science and art. Application of the concepts outlined in this paper, will result in the use of sound scientific evidence in decision making and ultimately improve public health practice.

5.0 Bibliography

1. Akukwe, C. and Popejoy, M.W. (2013) 'Strengthening health systems', *Global Public Health Policy*, pp. 401–405. doi:10.12968/ajmw.2010.4.1.46306.
2. Bhattacharya, D. and Bhatt, J. (2017) 'Seven Foundational Principles of Population Health Policy', *Population Health Management*, 20(5), pp. 383–388. doi:10.1089/pop.2016.0148.
3. Bompangue, D. (2014) 'Planning for the elimination of cholera: An example of integrated national plan', *International Journal of Infectious Diseases*, 21. doi:10.1016/j.ijid.2014.03.572.
4. Brownson, R.C. *et al.* (1999) 'Evidence-Based Decision Making in Public Health A stronger focus on evidence-based', *J Public Health Management Practice*, 5(5), pp. 86–97.
5. Brownson, R.C. (2011) 'Epidemiology in Public Health Practice: By A. Haveman-Nies, S. C. Jansen, J. A. M. van Oers, and P. van 't Veer', *American Journal of Epidemiology*, 174(7), pp. 871–872. doi:10.1093/aje/kwr255.
6. Brownson, R.C., Fielding, J.E. and Maylahn, C.M. (2009) 'Evidence-based public health: A fundamental concept for public health practice', *Annual Review of Public Health*, 30, pp. 175–201. doi:10.1146/annurev.publhealth.031308.100134.
7. Brownson, R.C., Fielding, J.E. and Maylahn, C.M. (2013) 'Frontiers in Public Health Services and Systems Research Evidence-based Decision Making to Improve Public Health Practice Evidence-based Decision Making to Improve Public Health Practice', *Frontiers in Public Health Services and Systems Research*, 2(2), pp. 1–9. doi:10.13023/FPHSSR.0202.02.

8. Jacobs, J.A. *et al.* (2010) 'Barriers to evidence-based decision making in public health: A national survey of chronic disease practitioners', *Public Health Reports*, 125(5), pp. 736–742. doi:10.1177/003335491012500516.
9. Jenicek, M. (1997) 'Epidemiology, evidenced-based medicine, and evidence-based public health', *Journal of Epidemiology*, 7(4), pp. 187–197. doi:10.2188/jea.7.187.
10. Malekinejad, M. *et al.* (2018) 'The discordance between evidence and health policy in the United States: The science of translational research and the critical role of diverse stakeholders', *Health Research Policy and Systems*, 16(1), pp. 1–21. doi:10.1186/s12961-018-0336-7.
11. Rabarison, K.M. *et al.* (2015) 'Economic evaluation enhances public health decision making', *Frontiers in Public Health*, 3(JUN), pp. 1–5. doi:10.3389/fpubh.2015.00164.
12. Rabarison, K.M., Timsina, L. and Mays, G.P. (2015) 'Community health assessment and improved public health decision-making: A propensity score matching approach', *American Journal of Public Health*, 105(12), pp. 2526–2533. doi:10.2105/AJPH.2015.302795.
13. Rychetnik, L. *et al.* (2006) 'interventions', pp. 119–127.
14. UNDRR (2020) 'Integrating Disaster Risk Reduction and Climate Change Adaptation in the UN Sustainable Development Cooperation Framework. Guidance Note on Using Climate and Disaster Risk Management to Help Build Resilient Societies.', p. 70.
15. Wahabi, H.A. *et al.* (2015) 'Evidence-Based Decision Making in Public Health:

Capacity Building for Public Health Students at King Saud University in Riyadh', *BioMed Research International*, 2015. doi:10.1155/2015/576953.

16. WHO (2018) *Health Emergency Information and Risk Assessment*, *Weekly Bulletin on Outbreaks and Other Emergencies*.

.