1.1 Introduction

Authors

Jonathan Abrahams, WHO Health Emergencies Programme, WHO, Geneva, Switzerland.

Ryoma Kayano, WHO Centre for Health Development, WHO, Kobe, Japan.

Mike Clarke, Centre for Public Health, Queen's University, Belfast, United Kingdom; Evidence Aid, London, United Kingdom.

Emily Y.Y. Chan, CCOUC, Faculty of Medicine, CUHK, Hong Kong SAR, China; GX Foundation, Hong Kong SAR, China.

Virginia Murray, Public Health England, London, United Kingdom.

1.1.1 The rationale for this Guidance

As the world and its population face ever-increasing challenges from emergencies and disasters of all kinds, the policy-makers, practitioners and community actors involved in health emergency and disaster risk management (Health EDRM) need to be able to access, understand and use the relevant evidence in order to be able to make decisions, develop strategies, and take actions that are well informed, effective and efficient in reducing health risks and consequences, thus alleviating suffering, saving lives and reducing the associated social, economic, environmental and cultural impacts. This evidence needs to come from reliable research, which has been robustly designed, well conducted and properly reported. This evidence will inevitably also highlight the need for new research to resolve ongoing uncertainties and fill knowledge gaps, and so Health EDRM decision makers and practitioners will also need to become involved in the generation of research and build effective collaborations with the research community.

Developed following extensive peer-review by multi-national, multi-disciplinary teams of people, the aim of this book is to:

- improve the quality of research in Health EDRM
- improve the quality of the policy, practice and guidance that is supported by evidence from this research
- increase research capacity among researchers and the research community, including new researchers, experienced researchers and teachers of research, and

- strengthen the collaboration and engagement between the research community and policy-makers, practitioners and stakeholders for improved Health EDRM.

The unique collection of chapters contained in this book provide straightforward, practical guidance on how to plan, do and report a wide variety of studies that can answer quantitative and qualitative questions in different settings, with specific emphasis on health-related disasters. Case studies of direct relevance to Health EDRM provide real-life examples of research, to illustrate the methods and their impact.

1.1.2 The context to this Guidance

The main driver for this book – which arose from the work of the WHO Thematic Platform for Health Emergency and Disaster Risk Management Research Network (Health EDRM RN) – is the shared aim of Health EDRM stakeholders to reduce the risks and consequences for the many millions of people worldwide whose health is affected by emergencies and disasters each year.

The context to the book emanates from the WHO Health EDRM Framework and the identified need to strengthen research and the research community, as described in the aspirations of the Health EDRM RN (see Chapter 1.2): The Health EDRM RN recognized the need to promote high quality research methods to those who commission and conduct research on Health EDRM, as well as the wide range of decision makers practitioners and community actors who need to use this research to inform evidence-based policies, programs and practice. It reflects the need for evidence-based policy and practice to implement the Health EDRM Framework, Sendai Framework on Disaster Risk Reduction 2015–2030, the International Health Regulations (2005), the United Nations (UN) Sustainable Development Goals (SDGs) and other relevant global, regional and national frameworks in health and other sectors.

The book provides guidance across a wide range of research, taking a systematic approach to discuss the type of research that is needed to generate relevant evidence for managing risks and consequences of emergencies and disasters. This research includes observational and experimental studies, and those that use qualitative or quantitative data, or both. When using the book, readers are encouraged to take account of the specific setting of the health risks of any emergency or disaster, including national capacities and the impacts that are directly and indirectly health-related.

The chapters have been written by a wide range of more than 100 international authors with practical experience and expertise in a wide range of areas – including research, practice and policy making – and peer reviewed by experts with a similar breadth and depth of knowledge. Each chapter provides signposting to further reading or sources of information that go beyond the issues that can be covered in a single chapter.

1.1.3 What you will find in this book

The chapters of the book are organized into six sections:

1. Introduction
2. Identifying and understanding the problem
3. Determining the scope of your study
4. Study design
5. Special topics to demonstrate research processes and benefits
6. How to become a researcher.

The book begins with an overview of the Health EDRM framework and the role of research (Chapter 1.2) to explain the context, followed by a historical review of the impact of emergencies and disasters on public health and the development of Health EDRM policies, focusing on Japan as a case study (Chapter 1.3).

Sections 2, 3 and 4 cover three major aspects of the research process: (i) identifying and understanding the problem that needs to be studied; (ii) determining the research question and developing a scoping study; and (iii) designing and conducting the main study.

The book concludes with a section on the practicalities of becoming a researcher and a glossary to explain terms that might be unfamiliar to some readers.

The first step in identifying and understanding the Health EDRM problem that needs to be studied is to investigate the underlying epidemiology: Chapter 2.1 describes some common impacts of emergencies and disasters on deaths, injuries and other health problems. This is discussed in more detail in Chapter 2.2, in relation to measuring the health impacts of emergencies and disasters. Chapter 2.3 discusses the assessment of burden of disease in general, while Chapter 2.4 describes various databases and registers relevant to the study of disaster epidemiology. The challenge of identifying and obtaining data from high risk groups is discussed in Chapter 2.5, and Section 2 ends with a discussion of the use of systematic reviews to identify, appraise and synthesize existing, relevant research studies (Chapter 2.6).

Once we have a good understanding of the problem that needs to be studied, Section 3 leads us on to the planning of research process. This might include asset mapping to show what resources are available for the research or to help measure its impact (Chapter 3.1), identifying risk factors (Chapter 3.2) and designing an intervention to test (Chapter 3.3). It is also important to consider the ethical implications of conducting research (Chapter 3.4). Researchers then need to finalize their research question (Chapter 3.5) and, if necessary, conduct a scoping review (Chapter 3.6), drawing on the information available in existing collections of research relevant to disasters (Chapter 3.7).

When the research question is clear, the appropriate study design must be chosen to answer it. Chapter 4.1 discusses the importance of this, outlining some of the study designs that are available, with a particular focus on using randomized trials to assess the comparative effects of different interventions, actions and strategies. Chapter 4.2 provides an introduction to the statistics that are likely to be used in many of the studies. Some of

the more challenging issues related to study design and statistics that might be used when individual randomization is not possible are tackled in Chapter 4.3 (cluster randomized trials), Chapter 4.4 (collection and management of high quality data) and Chapter 4.5 (advanced statistical methods). The use of modelling techniques is discussed further in Chapters 4.6 and 4.7, with the focus of Chapter 4.7 being economic evaluations. Chapter 4.8 introduces the potential for geographic information systems to help with disaster health research and Chapter 4.9 does similar for real-time syndromic surveillance systems. Part of the planning for any research may include a need to understand the pathway from actions to outcomes (Chapter 4.10) and to plan for the communication and implementation of the findings of the research (Chapter 4.11). In some circumstances, the most appropriate type of research will be a qualitative study or one that employs both qualitative and quantitative methods in a mixed methods design; these are discussed in Chapters 4.12 and 4.13 respectively. Chapter 4.14 shows the potential advantages of taking the opportunities presented by natural variations, by using a natural experiment design. Section 4 concludes with a chapter on monitoring and evaluation studies (Chapter 4.15).

The special topics presented in Section 5 include disaster mental health research (chapter 5.1), the use of crowdsourcing to gather data (Chapter 5.2), and research with refugees and internally displaced populations (Chapter 5.3) or indigenous people (Chapter 5.4).

Section 6 is dedicated to some of the important practical aspects of conducting research relevant to Health EDRM, beginning with some of the steps that will help someone become a successful researcher (Chapter 6.1). Chapter 6.2 covers the identification of existing literature that might help in becoming a researcher or designing a new study. Chapters 6.3 and 6.4 outline key things to consider when preparing an application for funding and obtaining ethical approval for a study, while Chapter 6.5 highlights specific issues encountered in relation to doing research in the field. Chapter 6.6 provides guidance on writing up and publishing the report of the study. Finally, Chapter 6.7 concludes the book with some more examples of the types of research that have been done in Health EDRM.

1.1.4 Key messages

Evidence is vital to well-informed decision making in Health EDRM. The research that provides this evidence must be high quality and fit for purpose. This book aims to provide guidance for researchers, would-be researchers, policy-makers and practitioners in order to:

- improve the quality of research in Health EDRM
- improve the quality of the policy, practice and guidance that is supported by evidence from such research
- increase research capacity among researchers and the research community, including new researchers, experienced researchers and teachers of research, and
- strengthen collaboration and engagement between the research community and policy-makers, practitioners and stakeholders for improved Health EDRM.