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# Advancing Suicide Research

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From K. Kölves, M. Sisask, P. Värnik, A. Värnik, & D. De Leo: *Advancing Suicide Research* (ISBN 9781616765590) © 2021 Hogrefe Publishing.

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Kairi Kõlves, Merike Sisask, Peeter Värnik, Airi Värnik,  
and Diego De Leo (Eds.)

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**Library of Congress Cataloging in Publication** information for the print version of this book is available via the Library of Congress Marc Database under the LC Control Number 2020945109

**Library and Archives Canada Cataloguing in Publication**

Title: *Advancing suicide research* / Kairi Kõlves, Merike Sisask, Peeter Värnik, Airi Värnik, and Diego De Leo (Eds.).

Names: Kõlves, Kairi, editor. | Sisask, Merike, editor. | Värnik, Peeter, editor. | Värnik, Airi, editor. | De Leo, Diego, 1951- editor.

Description: Includes bibliographical references and index.

Identifiers: Canadiana (print) 20200328220 | Canadiana (ebook) 20200328301 | ISBN 9780889375598 (hardcover) | ISBN 9781616765590 (PDF) | ISBN 9781613345597 (EPUB)

Subjects: LCSH: Suicide—Research. | LCSH: Suicide—Prevention.

Classification: LCC HV6545 .A38 2020 | DDC 362.28—dc23

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EUROPE: Hogrefe Publishing GmbH, Merkelstr. 3, 37085 Göttingen, Germany  
Phone +49 551 99950-0, Fax +49 551 99950-111; E-mail [publishing@hogrefe.com](mailto:publishing@hogrefe.com)

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Phone +49 551 99950-0, Fax +49 551 99950-111; E-mail [publishing@hogrefe.com](mailto:publishing@hogrefe.com)

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Format: PDF

ISBN 978-0-88937-559-8 (print) · ISBN 978-0-61676-559-0 (PDF) · ISBN 978-0-61334-559-7 (EPUB)

<https://doi.org/10.1027/00559-000>

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## Dedication

This book is dedicated to the memory of Associate Professor Allison Milner. She was a passionate and gifted academic who was an inspiration to us all. She devoted her academic career to helping those most in need through her research in mental health and suicide prevention. Her untimely death in an accident is a tragic loss. We are grateful for her contribution to the book.

Allison Joy Milner (May 1, 1983 – Aug 12, 2019) was a social epidemiologist focusing on workplace mental health and suicide prevention. Her research career started at the Australian Institute for Suicide Research and Prevention at Griffith University working on the Queensland Suicide Register and the World Health Organization's project Suicide in At Risk Territories (the WHO/START study). She continued her doctoral studies on suicide and globalization and was awarded a PhD by Griffith University in 2010. Her postdoctoral studies brought her to the University of Melbourne in 2012, where she finished a master's degree in epidemiology. In 2015, she was appointed as the Deputy Director of the Work, Health and Wellbeing Unit at Deakin University. She became Associate Professor and Deputy Head of the Disability and Health Unit at the Centre for Health Equity, Melbourne School of Population and Global Health at the University of Melbourne in 2018.



Allison Milner (1983–2019)

Despite her tragically short life, Allison was a very productive academic, publishing over 170 peer-reviewed papers (Scopus), numerous book chapters and reports. Allison was the National Academic Director of Mates in Construction, Co-Chair of the IASP Special Interest Group on Suicide in the Workplace, and a member of different boards and committees. Allison was a recipient of a number of awards including, the National Emerging New Researcher Award from Suicide Prevention Australia in 2011; a Tall Poppy Science Award in 2014; the Vice Chancellor's Award for Excellence in Research (Deakin University) in 2015; the Griffith University Outstanding Higher Degree Research Health Alumnus award in 2017.

She was a devoted wife to Rohan and mother to Byron and Theo, and a dear friend and colleague to many of us, and she is greatly missed.

# Acknowledgments

We are grateful to Dr. Victoria Ross and Dr. Damian Shaw-Williams for their help with language editing.

Kairi Kõlves' editing and writing contribution to this book was supported by the Academic Studies Program of Griffith University, Brisbane, Australia. Merike Sisask was supported by the Estonian Research Council (Grant PRG71 “Contemporary Demographic Developments in Estonia: In Search of Pathways Towards a More Sustainable Society”).

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# Foreword

Suicide is a serious public health issue causing about 800,000 deaths globally, every year. Most suicides can be prevented with some evidence-based interventions, both at the single health care practitioner level and at the level of national policy.

High-quality data on suicide and suicidal behavior is lacking. According to the World Health Organization (WHO), only 80 countries have good-quality registered data on suicides that can be used to estimate suicide rates. More countries should invest in starting to register suicidal behavior and share their data.

Suicide is an enigmatic behavior. Most living creatures carry a genetic instinct for survival even in highly unfavorable circumstances. For most nonsuicidal people, it is hard to understand the extreme mental pain that causes a person to take their own life. The data we have today seem to indicate that suicidal behavior is a multifactorial trait, and death by suicide is an acute event that occurs in psychologically and biologically vulnerable people, usually suffering from chronic mental pain. In the fight with this global epidemic, we need a considerable international effort, good science, and an evidence-based approach by multidisciplinary teams. Only an evidence-based approach can lead to effective and safe interventions.

*Advancing Suicide Research* is the most comprehensive text in the field of suicide research methods. A group of leading researchers in suicidology, Kairi Kõlves, Merike Sisask, Peeter Värnik, Airi Värnik, and Diego De Leo, have joined together to present us with a reference book that describes every method used for suicide research. Focusing on quantitative, qualitative, and mixed methods approaches, the book covers everything a researcher in suicidology may need.

An important aspect of this book is the consolidation of definitions so that all of us are on the same page, as well as providing a complete list of ethical aspects for this sensitive area of research. The book covers most of the known measures of suicidal behavior, offering a reliable and valid tool that allows for data pooling from different locations and populations. It then goes on to cover observational studies, interventional studies, and linkage studies. Of great importance is its coverage of qualitative and mixed approaches. Sometimes the story of a single suicide victim can teach us a great deal and lead to new hypotheses. The book covers the whole spectrum of studies from case reports to meta-analyses. It ends with some strong chapters on prevention and postmortem studies and on technological advances.

This book will be of great interest for a wide range of readers, from students and junior PhD scientists, to experienced researchers who are familiar with and use only a single method and want to learn other methods. Also, policy makers, clinicians, and other practitioners interested in suicide research will find the text easy to read and understandable.

Prof. Gil Zalsman, MD, MHA, BSc  
President of the International Academy for Suicide Research (IASR)  
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# Preface

Suicidal behavior has a significant global human toll. Despite differing levels of suicidality and circumstances among nations, in 2014 the World Health Organization led the global call for suicide prevention using a public health approach. Research is the underlying feature of the public health model in suicide prevention. It plays a vital role in improving our knowledge about suicidal behavior, and developing and evaluating suicide prevention interventions. To advance the quality of suicide research and prevention, this book focuses on conducting suicide research by presenting key concepts from the public health perspective. We are grateful that a wide range of experts working in suicide research have contributed their wisdom and knowledge to it.

Before formulating research questions and considering the most suitable research designs and methods, it is important to contemplate the work in the field that has been completed to date. Chapter 1 does this, giving a brief summary of the historical contributions to modern suicide research. Considering different terminologies, Chapter 2 focuses on definitions and nomenclatures of suicidal behavior. Chapter 3 sets the scene for the use of a public health approach to suicide research to identify the patterns of suicidal behavior and explore risk and protective factors, as well as develop and evaluate interventions. Ethics is an important concern in conducting research, and ethical challenges in suicide research are addressed in detail in Chapter 4.

Epidemiology is the cornerstone of public health; the proper use of epidemiological measures and study designs is also central to the success of suicide research and prevention. Chapter 5 focuses on measures in suicide research, and that focus is continued in Chapters 6 and 7, which present the use of observational and intervention studies and discuss their strengths and weaknesses. Chapter 8 explores the potential use of data linkages as an alternative to conducting observation and intervention studies.

While epidemiology is positivistic by nature, utilizing quantitative methods, there is a growing need for qualitative methods in public health and health research more widely. This need has also grown in suicide research, as presented in Chapter 9. In addition, mixed methods designs incorporating both quantitative and qualitative methods have been welcomed in suicide research in the last decade and are discussed in Chapter 10.

Further, a number of other essential topics in suicide research are covered. Chapter 11 explores the use of a psychological autopsy as an important research tool since the 1950s. Chapter 12 addresses the need to test one's methodology in the form of a feasibility or pilot study before conducting a large-scale study. Chapter 13 considers the need for systematic literature reviews and meta-analyses, with methodological issues being addressed in detail. Chapter 14 presents different approaches to designing evaluations in suicide prevention; Chapter 15 adds considerations from an economic perspective. The final chapter addresses new technologies and their application to the future of suicide research.

We hope that students, practitioners, and policy makers may find some valuable elements here to improve their knowledge, but also that academics working in the field may benefit from insights into methodology or concepts they have not utilized before.

Kairi Kõlves, Merike Sisask, Peeter Värnik, Airi Värnik, and Diego De Leo

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# Chapter 2

## Definitions in Suicide Research

*Benjamin Goodfellow*

### Summary

The definitions of suicide and other suicidal behaviors are central to research and everyday practice. Common definitions and terms are important in order to compare results of studies conducted by different research teams and advance toward a better understanding and prevention of suicidal behaviors. This chapter aims to present a range of challenges related to terminology and definitions in suicide research. A brief overview of the history of the term *suicide* and description of modern English language definitions in suicide research will be presented. A non-Western perspective will be illustrated with an example from the Pacific island of New Caledonia. Some considerations of nomenclature and classification, and a review of terms to be avoided in suicide research are discussed.

Each death by suicide is a dramatic result of a complex interplay of factors, with each story being unique. Yet, despite this complexity, suicide death can be qualified in a universal way as an act by which a person is the cause of his or her own death. Despite numerous attempts, however, there is still no universally agreed definition of suicide. Different definitions of suicide complicate the determination of cause of death and lead us to question the reliability of suicide mortality data worldwide (De Leo, 2015). Lack of a universal definition impacts the work of coroners, police investigators, clinicians, and researchers. Furthermore, it hinders epidemiological studies, including identification of risk and protective factors and evaluating the effectiveness of suicide prevention interventions and developing public health strategies.

This chapter will explore this complex topic by providing some historical context and reviewing contemporary definitions of fatal and nonfatal suicidal behavior. Further challenges from a cultural perspective will be presented in a brief overview of terms used in New Caledonia, as an example of a non-Western environment. Finally, considerations of nomenclature, classification, and terms to be avoided in suicide research will be presented.

### Origins of the Word *Suicide* in Europe

The term *suicide* was coined in England during the 17th century and first appeared in a text by Sir Thomas Browne, *Religio Medici*, written in 1636 and published in 1642 (Minois, 1995). According to Minois (1995), the appearance of this word was related to Browne's urge to distinguish suicide from the murder of another person. Browne also wanted to distinguish the Christian and totally condemnable *self-killing* from Cato's heathen *suicidium*. The term was built from the Latin words *sui* (self) and *caedes* (murder). The English term then passed into French, Spanish, Italian, and Portuguese languages during the 18th century. Minois highlights that from the Middle Ages up to the Renaissance, the act of killing oneself was always tightly bound with moral values and constantly dealt with in ambivalent ways. The history

of suicide in Europe throughout that period was characterized by the struggle between those who wanted to condemn it entirely and those who considered there was some noble form of suicide that was acceptable and sometimes even admirable. This noble form of suicide had nothing to do with the self-killing of the commoners, viewed by the Church as a form of despair and thus the worst form of sin. The word *suicide* according to Minois (1995), is thus bound up with the moral values of the 17th-century Western world.

Barbagli (2015) attributes the same origin to the word *suicide*. He details its progressive use in England and its slow progress throughout Europe during the 18th century. Similarly to Minois (1995), he highlights the fact that suicide was a neologism created to name an already existing behavior that until then was only referred to using the word *murder*. Suicide was just as condemnable as murder and was considered the worst sin. In certain parts of Europe during some periods, killing oneself was actually considered to be even worse than killing someone else (Barbagli, 2015). According to Barbagli (2015), the appearance of the new word *suicide* in the 17th century corresponded to an important shift in moral values in Europe during that time. Suicide was progressively less condemned in Europe during the 18th and 19th centuries (Minois, 1995; Barbagli, 2015). According to Minois (1995), this led to the progressive medicalization of suicide. Barbagli (2015) states that the shift in attitudes is one of the determining causes of the supposed rise in suicide rates in Europe during the 18th and 19th centuries.

## Two Founding Definitions of Suicide

One would suppose that what Minois (1995) described as the “progressive medicalization of suicide” during the 18th and 19th century, would logically have resulted in a vast wealth of scientific literature at the beginning of the 20th century. However, in 1938, Menninger (1938) notes that this was surprisingly not the case. He contrasts this to the fact that suicide rates were high in America at the time and suggested this was related to the taboo surrounding the topic of suicide. It appears that the scientific study of suicide took some time to finally develop into an academic discipline in the 1960s (Maris, 1993). To give a context before presenting a review of contemporary suicide definitions, two definitions from influential theories about suicide by Durkheim (1897) and Menninger (1938) will be briefly presented.

In 1897, the French sociologist Emile Durkheim published *Le suicide. Étude de sociologie* (*Suicide: A Study in Sociology*; Durkheim, 1897), in which he applied suicide as a subject to introduce a scientific (empirical) methodology in sociology. His book has been considered as the starting point of empirical sociology, and also of suicide research. Throughout this work, he details a fourfold etiological typology of suicide (i.e., egoistic vs. altruistic and anomic vs. fatalistic suicide). In his Introduction, Durkheim augments his definition of suicide: “All cases of death resulting directly or indirectly from a positive or negative act of the victim himself, which he knows will produce this result” (Durkheim, 1897, p. 5; translated from the French). The major components of this definition – that is, death resulting from self-inflicted action (or inaction) and knowledge of the (direct or indirect) consequences of the action, can be found in later definitions. Durkheim deliberately excludes intent from his definition, and his argument for doing so is that intent is not observable. He also states that intent cannot be observed by oneself introspectively either. Indeed, the main point of his book is to detail the external causes of suicide, while considering that psychiatric disorders could only modestly, if at all, explain the varying rates of suicide across the countries in Europe at that time.

# Chapter 6

## Observational Studies in Suicide Research

*Kairi Kõlves, Merike Sisask, and Ian R. H. Rockett*

### Summary

Observational study designs are extensively used in epidemiology. The appropriate study design to respond to the research question is crucial to the success of a study. The current chapter examines different types of observational study designs and their application in suicide research. Considerations about their suitability with regard to their nature, including strengths and limitations, time to implement, budget, and other practicalities for a researcher, study team, and stakeholders are of utmost importance and are discussed with examples from suicide research. Also discussed are causation and internal and external validity.

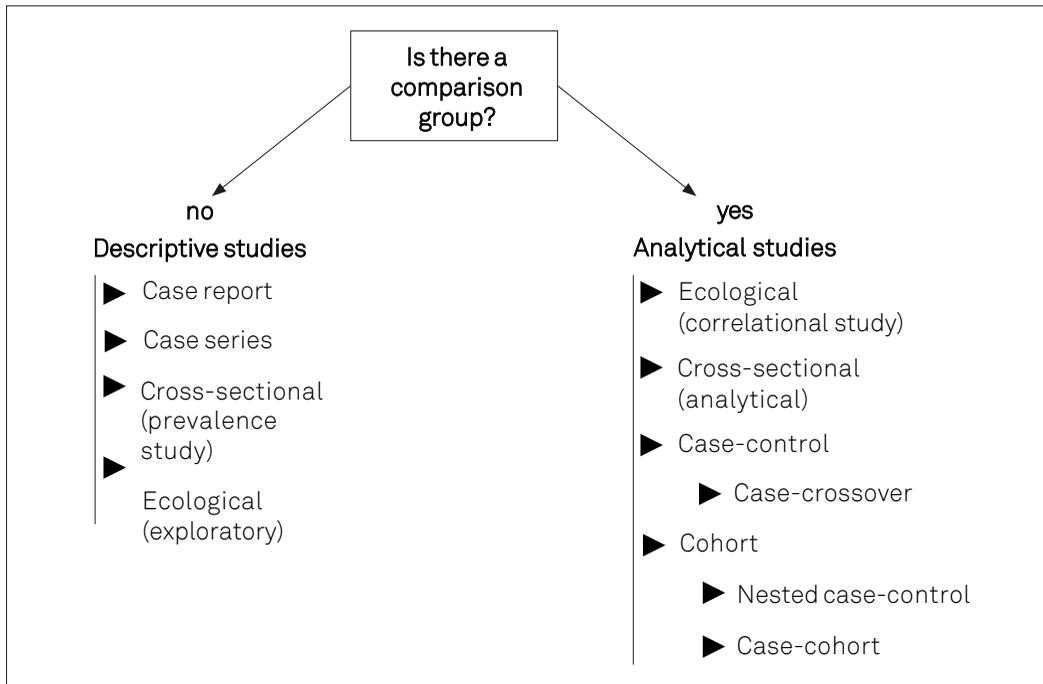
Once we have identified our research questions and established the aims of our study, we need to consider which study designs would be suitable in responding to these questions. The focus of the current chapter is the different types of study designs that are applicable to observational research. An observational study is one in which the exposure of interest is not manipulated by the investigator. Therefore, by definition, such studies are nonexperimental (Porta, 2008). Consideration of the appropriate study design is crucial to the success of a study. To choose the best possible design for our research question, we need to examine the nature of those designs including their strengths and limitations, time to implement, budget, and other practicalities for a researcher, study team, and stakeholders (e.g., the organization that requests a given study).

### Descriptive and Analytical Studies

There are two main types of observational studies: descriptive (exploratory) and analytical. The usual criterion for differentiating the two is that an *analytical study* has a comparison or a control group (Centers for Disease Control and Prevention [CDC], 2012; Grimes & Schulz, 2002d). Nevertheless, this is not necessarily clear-cut. Some study designs might be descriptive under some circumstances and analytical under others (e.g., cross-sectional, see Figure 6.1), and epidemiologists can vary in how they categorize them.

*Descriptive studies* are the first step in an epidemiological enquiry about a specific condition or behavior (e.g., suicidal behavior). In sound epidemiological research, we need to answer five basic *W* questions – what, who, where, when, and why (CDC, 2012; Grimes & Schulz, 2002c; Webb, Bain, & Page, 2020). These questions correspond to case definition, person, place, time, and causes or risk factors. Descriptive studies are expected to cover the first four:

- Case definition – *what* condition (or behavior) are we studying? A case definition is a vital step in epidemiology to establish in detail how we measure the condition we are studying. This could also be referred to as an *operational definition* in suicide research. For example, we can define suicides as all deaths by intentional self-harm, according to *the International*



**Figure 6.1** Descriptive and analytical study designs.

*Statistical Classification of Diseases and Related Health Problems*, 10th revision (codes X60–X84; World Health Organization [WHO], 2004).

- Person – *who* is at risk for the condition or event of interest? For example, who is more likely to die by suicide? What is the sociodemographic profile of these persons? Age and sex are the most commonly used personal characteristics. However, other characteristics are also important (e.g., marital status, occupation, ethnicity, and lifestyle factors) (CDC, 2012; Grimes & Schulz, 2002c).
- Place – *where* did the condition or event of interest occur? Where is the suicide rate lower or higher? We need to clarify the geographical location under study, such as a country, or urban versus rural location.
- Time – *when* did it occur? We have to specify the duration of our observation period as, for example, in weeks, months, or years.

Descriptive studies are useful for identifying the magnitude of the problem, which helps guide health policy and planning. They also provide first clues about potential determinants of the condition or event, although we cannot draw inferences about associations or causality. They can assist with hypothesis formulation (Rockett, 1999), which can be tested using analytical study designs (CDC, 2012; Grimes & Schulz, 2002c, 2002d; Webb et al., 2020). Traditionally, analytical studies have a control or comparison group, which helps us analyze *why* a behavior or condition occurred. We can then identify risk factors and possible causes (CDC, 2012; Grimes & Schulz, 2002c; Webb et al., 2020).

Prior to describing specific study designs, we need to explain two key terms in epidemiology – exposure and outcome. The *outcome* is the condition or event under study, while an *exposure* is the risk factor we are investigating that might be a cause of the outcome. In suicide

factors that can be integrated with quantitative data to enhance understanding and interpretation in a specific context for suicide (e.g., Ross, Koo, & Kõlves, 2020).

Mixed methods research can thus be applied to strategically harness the strengths and complement the weaknesses of quantitative and qualitative methods: a powerful approach to addressing the complex and multifaceted problem of suicide (Johnson et al., 2007; Tariq & Woodman, 2013). As outlined previously, the integration or triangulation of mixed methods results also provides readers and reviewers with more confidence in the results and conclusions that can be drawn from the study (McKim, 2017). However, McKim also cautions that it is important to be clear about the perceived value of combining two such distinct methods, given that conducting a mixed methods study requires significant additional resources, time, and expertise.

## Mixed Method Designs

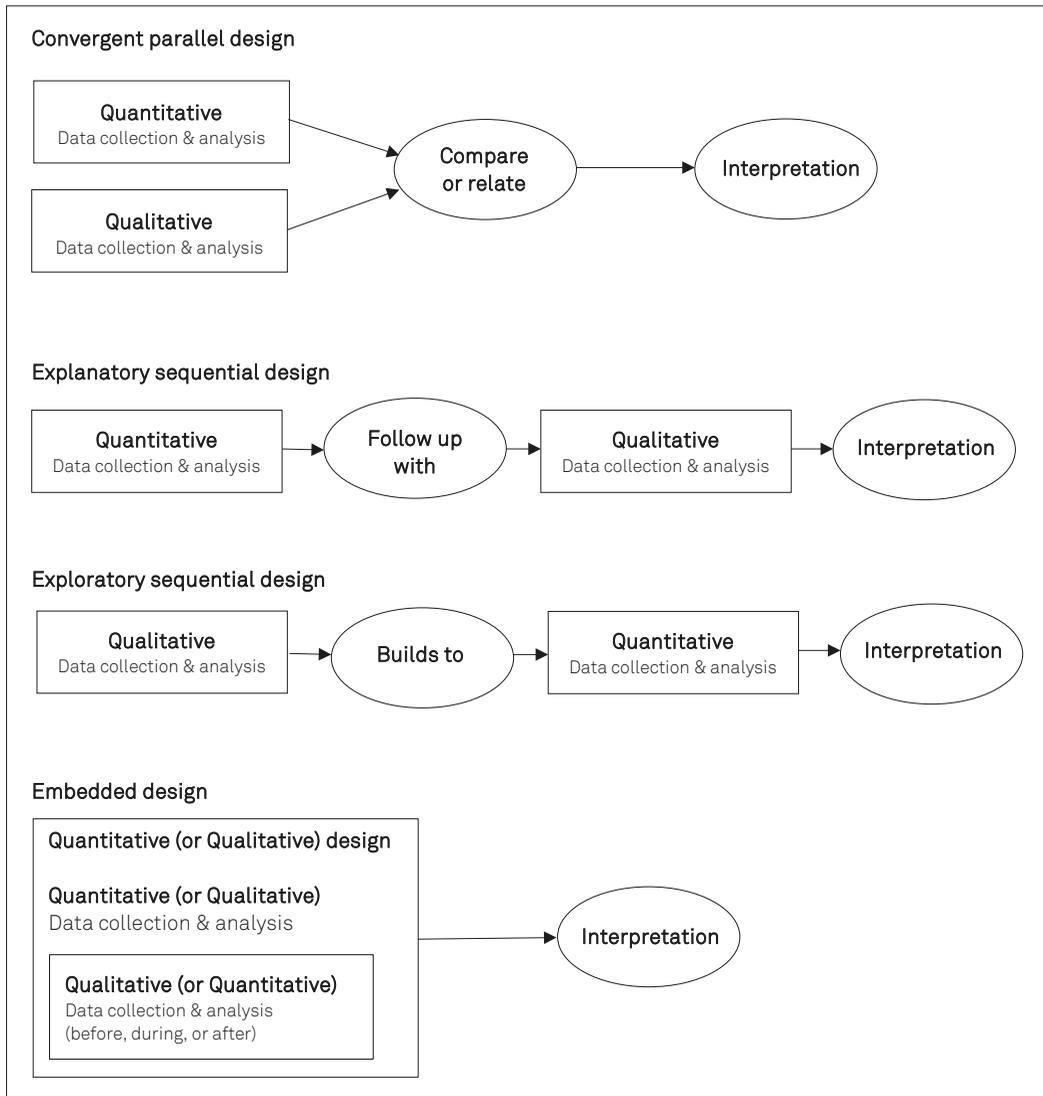
Creswell and Plano Clark (2011) recommend that prior to designing a mixed methods study, it is important to consider how the quantitative and qualitative aspects of the study will interact, how they will be prioritized, their timing in the study, and how they will be mixed and/or integrated. Once these decisions have been made, there are a range of mixed methods designs available. Creswell and Plano Clark (2011) provide a comprehensive description of mixed methods studies and identify the following four main mixed methods designs:

- The *convergent parallel design*. The researcher uses concurrent timing to implement the quantitative and qualitative components, prioritizes the methods equally, analyses each component separately, and then integrates the results at the interpretation stage.
- The *explanatory sequential design*. This comprises two distinct interactive phases. The first phase is the quantitative collection and analysis of data, which aims to address the research questions. The second, qualitative phase is designed to enhance understanding of the findings from the first phase.
- The *exploratory sequential design*. The first phase prioritizes the collection and analysis of qualitative data. The second, quantitative phase is conducted to test and generalize the initial findings.
- The *embedded design*. Using this design, the researcher may embed a qualitative strand within a quantitative design, or embed a quantitative strand within a qualitative design. The purpose of including the embedded strand is to enhance the overall study design in some way.

Figure 10.1 illustrates the four main mixed methods study designs. Using these four basic designs as a framework, more complex designs bringing multiple design elements together, such as a *transformative design* and a *multiphase design*, can be developed (see Creswell & Plano Clark, 2011).

## Application of Mixed Methods in Suicide Research

In recent years, mixed methods approaches have become increasingly popular in suicide research. We conducted searches of the available literature where mixed methods have been applied in suicide research and identified four major themes: factors associated with suicidal



**Figure 10.1.** Four main mixed methods research designs. Reprinted with permission from “Designing and Conducting Mixed Methods Research” (2nd ed.), by J.W. Creswell & V.L. Plano Clark, pp. 69–70, Thousand Oaks, CA: Sage. © 2011 by SAGE.

behaviors, reactions to suicide bereavement and help seeking, stigma, and evaluating suicide prevention interventions.

Our brief review indicated that the most common topic in mixed methods suicide research was *factors associated with suicidal behaviors*. Several studies obtained data from the US National Violent Death Reporting System (NVDRS), a database that comprises quantitative and qualitative data including age, race and cause of death, toxicology reports, coroners’ reports, police reports, and transcribed interviews from the decedents’ family and friends regarding life stressors, school problems, emotional problems, and mental health issues. For example, Holland and colleagues (2017) examined a comprehensive list of variables that may contribute to suicide in youths aged 11 to 15, while Schiff and colleagues (2015) used NVDRS data

*studies*, and *feasibility studies* that are not pilot studies (henceforth referred to simply as feasibility studies; Abbott, 2014). While it is commonplace for researchers to report both a feasibility and pilot study within the same paper, the two are still distinct. Indeed, the extended Consolidated Standards of Reporting Trials (CONSORT) guidelines suggest distinguishing between primary (feasibility) and secondary (pilot) objectives (Eldridge, Chan, et al., 2016).

## Feasibility Study

A *feasibility study* has been defined as “research done to assist the design of the main study and to answer the question ‘Can the study be done?’” (Billingham, Whitehead, & Julious, 2013, p. 2; see also Eldridge, Chan, et al., 2016; Eldridge, Lancaster, et al., 2016). In response to this question, a feasibility study may also be used to assess the acceptability of an intervention or a questionnaire. In suicide research, prototypical feasibility studies explore feasibility, including uptake, access, resources and time, training, and acceptability including engagement, attendance, therapeutic alliance, and satisfaction outcome (e.g., Haddock et al., 2019; Hill & Pettit, 2019; Tracey, Roney, Pignatiello, Monga, & Korczak, 2018). Intervention eligibility and refusal rates, follow-up rates, and completion rates have also been suggested as potential outcomes (Eldridge, Chan, et al., 2016). Moreover, feasibility studies may describe characteristics of proposed outcomes and variance estimates (Arain et al., 2010). A feasibility study will assist in determining the fluency, potential issues, and outcome characteristics in each of these areas and in turn will assist later trial implementation.

Details on what will be measured and how, and a justification for the study should be clearly presented in published protocols or in the background documents of the study (e.g., Eldridge, Chan, et al., 2016; Haddock et al., 2016). In addition to having clear outcome measures a priori, it is important, intuitively, to have preexisting standards for what would be acceptable and feasible, based on previous research and clinical guidance. For example, Haddock et al. (2019) reported what they deemed to be an acceptable number of attended sessions (i.e., criteria) prior to the study (Haddock et al., 2016). Having preset criteria will ensure it is clear whether the study is feasible and acceptable (or not). An example is presented in Box 12.1.

### Box 12.1. Example of feasibility and pilot study that assessed the acceptability of a cognitive behavior intervention in suicide prevention

The UK study INSITE (INpatient Suicide Intervention and Therapy Evaluation) was conducted to assess the feasibility and acceptability of a cognitive behavior intervention in suicide prevention (CBSP) intervention in people with psychosis in an inpatient setting (while also conducting a nonrandomized pilot trial) and compared treatment as usual versus the CBSP protocol.

Regarding feasibility, this study reported:

- the mean number of sessions attended;
- the breakdown of numbers of participants in relevant areas (i.e., employment status, age, marital status, and living arrangements);
- attrition rates, adverse events, and therapeutic alliance (quantitatively with validated measures; qualitatively with interviews).

Although 178 participants were referred to the study, only 70 were eligible and only 51 patients were randomized (19 were discharged prior to baseline). Just over half of the offered sessions were attended, and most sessions were delivered in an outpatient setting. Moreover, most patients (62%) attended the minimum 10 sessions (86% attended at least five). Reasons for non-attendance were also documented, with only a mean of 1.83 sessions not attended without a reason.

These outcomes were deemed most important to the authors in terms of demonstrating intervention feasibility. However, this list could be adapted to suit a range of areas relevant to the intervention (e.g., call-back rates in a phone follow-up service). In such studies, descriptive statistics (% , n, range) ensure outcomes are clearly reported, and in this study, they were reported either in the text or in tables.

In addition to assessing feasibility and acceptability, a pilot trial of the CBSP intervention was also conducted to compare a treatment as usual group (TAU) to a group with TAU and the new intervention (CBSP). In the pilot trial, a range of secondary measures were taken including measuring a range of secondary outcomes including suicidal ideation, psychopathology, functioning, service use, and psychological measures of suicide – similar measures to what were proposed to be explored in the eventual full-scale trial; plus cost effectiveness.

While statistical analyses were conducted to explore outcomes preintervention and postintervention, no direct hypothesis testing was performed. Instead, means and standard deviations for each outcome were presented separately for the groups (i.e., TAU and CBSP), and a cost-effectiveness analysis was conducted to answer the initial research question – is the study feasible? Based on the obtained outcomes, the study was deemed to be acceptable, feasible, and cost-effective, and would progress to a full-scale study.

Based on Haddock, G., Pratt, D., Gooding, P.A., Peters, S., Emsley, R., Evans, E., ... Awenat, Y. (2019). Feasibility and acceptability of suicide prevention therapy on acute psychiatric wards: Randomised controlled trial. *BJPsych Open*, 5(1), e14.

## Pilot Study

*Pilot studies* are technically considered a subset of the broader feasibility term (Eldridge, Chan, et al., 2016; Eldridge, Lancaster, et al., 2016). As such, there is some overlap between pilot and feasibility studies (Arain et al., 2010). Even so, pilot studies are defined separately as “a version of the main study that is run in miniature to test whether the components of the study can all work together” (Arain et al., 2010, p. 5). For example, researchers may seek to explore the effectiveness of blinding procedures, selection bias, recruitment rates, and how well these processes run. Additional outcomes may include the numbers of participants that meet inclusion criteria, complete treatment requirements, or complete follow-up assessments. A specific type of pilot study, the *pilot trial*, is put in place to determine if components of a proposed randomized controlled trial (RCT) will work (or not) when undertaken. Due to their lacking power (because of their small sample size), pilot trials should not discuss treatment effectiveness but may present pre versus post or group outcome measures. We also distinguish briefly here between randomized and nonrandomized pilot studies. The former includes participants being randomized to distinct groups whereas the latter does not (Eldridge, Lancaster, et al., 2016).

## Methodological Considerations

Ironing out potential issues prior to full-scale trials by implementing preliminary studies can be achieved by taking a close look at intervention methodology. The current section presents methodological aspects of feasibility and pilot studies, including procedures, outcomes, and issues faced.

### Methodological Considerations in Feasibility Studies

#### Procedures

In line with the aims of preliminary research, there are multiple factors to consider around study procedures. These can be addressed in both feasibility and pilot studies, and facilitated by checklists or guidelines. In terms of a feasibility study, where the focus is on whether the trial can be conducted, procedures that need to be addressed include assessing appropriateness of study design, adequacy and availability of resources, expectations of study components (e.g., data collection; Boeije, Drabble, & O’Cathain, 2015), and ensuring the validity and reliability of measurement tools (Hazzi & Maldaon, 2015). In line with this, Morris and Rosenbloom (2017) provide an 11-stage step-by-step guide in conducting feasibility research (i.e., feasibility or pilot studies). The guidelines cover important aspects that ought to be considered, including setting, sample size, recruitment, and data analysis, as well as seeking approval from institutional review boards (see Box 12.2).

#### Box 12.2. Guidelines for conducting preliminary studies

1. Identify a problem and/or a question.
2. Review the literature.
3. Identify gaps in our knowledge.
4. Refine the general question, formulating a specific research question(s).
5. Consider your reasons for conducting preliminary research & determine the form it should take.  
Evaluate the feasibility of carrying out the planned protocols and interventions of an anticipated larger study.
  - a. Randomization of participants? Conduct randomized pilot study.
  - b. Without randomizing participants? Conduct nonrandomized pilot study.  
Evaluate aspects of data collection, data management, the adequacy of resources to carry out a study, or other processes to be undertaken in an anticipated future trial (excluding the specific intervention and exact protocol) with a small sample?
  - c. Conduct a feasibility study that is not a pilot study.
6. Design the study.
  - a. Choose a research design (cross-sectional, cohort, or correlation, for example).
  - b. Determine setting, sample size, recruitment strategy, randomization (if appropriate), instruments, data analysis, and procedures.
  - c. Ensure protection of human subjects (submit plan for institutional review board approval).
7. Collaborate with stakeholders at the setting to minimize disruptions and obtain support.
8. Carry out the study.
9. Analyze the results.
10. Relate the findings to plans for a future study.
  - a. Do results suggest it is worthwhile to pursue the study as planned?

# Chapter 15

## Applying a Health Economics Lens to Suicide Research

David McDaid

### Summary

This chapter applies a health economics lens to suicide research. Policy makers are faced with difficult choices regarding how best to make use of scarce resources to promote and improve health. Not only do they want to know what works, and in what context, but also at what cost. They may also want to know the relative cost-effectiveness of investing in different ways to prevent suicidal behavior, for instance, through alternative ways of achieving this goal or using resources, both within and beyond health care systems. The chapter begins by briefly outlining what is meant by an economic perspective on investing in suicide prevention, and then sets out some key economic questions that can be addressed in research. It illustrates how economics can be used to strengthen the case for investment in suicide prevention and considers how this evidence base may be further strengthened.

### Importance of Considering the Economic Case for Action to Tackle Suicide

It may seem disquieting or even immoral to have to make an economic case for suicide prevention. The profound impacts of suicide might be thought to be enough to justify actions by policy makers to address this issue, but economic evidence can play a pivotal role in public policy making at national and local levels. Decisions on suicide prevention strategies are not made in a vacuum; all economies operate within resource constraints, in terms of budgets, available workforce, and infrastructure. These resources will be scarce relative to the expectations and needs of any population. Investing resources in interventions to tackle suicide prevention will mean that there is less money available – in the short-term, at least – for other activities such as reducing cardiovascular-related mortality or building new schools.

Choosing how to allocate resources is never easy. At the heart of all decisions on how to manage resources for health-related activities should be the desire to improve quality of life and well-being. This requires robust evidence for actions that are effective. However, in the context of ever-present budget constraints, evidence of effectiveness alone will often be insufficient for policy making; in addition to knowing what works and in what context, information about the economic costs and consequences of any suicide prevention strategy is likely to be required.

Economists nearly always takes scarcity as a *given*, and then seek to provide health and other policy makers with information to assist in the difficult task of deciding how to allocate resources to different potential uses. Economics is therefore concerned with how resources are generated and utilized, how decisions are taken about how to make use of those resources, and what criteria might be employed to inform those decisions.

In some countries, economic evidence on suicide prevention (and other health-related interventions) can be collected at a national level by public or private bodies. In England, for example, the National Institute for Health and Care Excellence (NICE) always looks at the economic case when developing guidelines on health promotion and injury prevention, including for suicide and deliberate self-harm. A lack of information on the economic benefits of investment in any health promotion or disease prevention action, including suicide prevention, may be a major barrier to investment (McDaid, Sassi, & Merkur, 2015).

## How to Make the Economic Argument

So how can economic information help make the case for investing in suicide prevention? This chapter will expand on and discuss four key questions, set out in Box 15.1, where economics can play a role in increasing appropriate investment in preventing suicide and self-harm. The reader may also wish to refer to standard reference texts that set out in great detail how economic arguments can be made (Drummond, Sculpher, Claxton, Stoddart, & Torrance, 2015).

### Box 15.1. Key economic questions for investment in actions to prevent suicide and self-harm

- The costs of inaction: What are the economic consequences of not taking action to prevent suicide?
- The costs of action: What would it cost to intervene through universal and targeted suicide prevention strategies?
- The cost-effectiveness of action: What is the balance between the cost of intervention and the outcomes achieved – for example, fatal and nonfatal suicidal acts averted, additional life years saved, improved mental health of families, etc.?
- Influencing the economic determinants of suicide and deliberate self-harm: What role do economic circumstances play in risk for suicide, and what can be done to address these risks in a cost-effective manner?

## Measuring the Costs of Inaction

The first of these questions focuses on the economic consequences of preserving the status quo and *not* taking any additional action to prevent suicide. Understanding the magnitude and relative importance of these costs, as well as the sectors that bear them, are critical to making the economic case for any action. There will be *direct costs* to consider, typically including costs incurred by health care (or other services) associated with suicide. Within health care systems, this information may be readily available from electronic health records in some contexts, in other settings it may mean having to set up mechanisms to prospectively record health service use as part of any evaluation. There may also be longer-term costs to consider, linked to any ongoing care and support following a nonfatal self-harm event. Direct costs will also be incurred by other public bodies, such as fire, rescue, and police services or transport systems – for example, road and rail service disruption due to investigations after a suicidal event.

2019). Table 16.1, produced by the National Institute of Mental Health, provides a good overview of the current advantages and disadvantages of mental health apps.

**Table 16.1** Advantages and disadvantages of mental health apps

Advantages	Disadvantages
<p>Convenience</p> <p>MHapps may be adopted by those who have difficulty with in-person clinical appointments or avoided psychiatric care in the past. Treatment can take place anytime and anyplace. Individuals can seek treatment options without involving others.</p>	<p>Treatment tailoring</p> <p>MHapps offer the same treatment program to all users, but there is a need to understand if apps work for all individuals and for all psychiatric conditions.</p>
<p>Data collection</p> <p>Some apps can gather data without any help from the user. Receiving information from a large number of individuals at the same time can increase researchers' understanding of mental health and help them develop better interventions.</p>	<p>Privacy</p> <p>Apps manage sensitive personal data and app developers need to be able to guarantee privacy for app users.</p>
<p>Affordability</p> <p>Some apps are cost-free or cost less than usual care.</p>	<p>Regulation</p> <p>There is no industry-wide regulation to inform users if an app is proven effective; regulation of mental health technology and the data it generates needs to be developed.</p>
<p>Accessibility</p> <p>Technology can offer treatment to patients in remote areas or to individuals in times of intense need (e.g., following a natural disaster).</p>	<p>Effectiveness</p> <p>Scientific evidence that this technology works as well as the usual care is underdeveloped.</p>
<p>Support</p> <p>This technology can provide 24-hr monitoring and/or intervention support and can complement usual therapy.</p>	<p>OVERRATING</p> <p>There is concern that if an app promises more than it delivers, users may turn away from other more effective therapy programs.</p>

Note. MHapps = mental health apps. Reprinted with permission from "Digital Technology Adoption in Psychiatric Care: An Overview of the Contemporary Shift from Technology to Opportunity," by A. Hategan, C. Giroux, & J.A. Bourgeois, *Journal of Technology in Behavioral Science*, 4, p. 173. © 2019 by Springer Nature Switzerland AG.

Mobile apps have significant potential to deliver high-efficacy mental health interventions. As Moock (2014) suggests, unrestricted access to adequate medical care for people with mental disorders will be one of the pressuring public mental health tasks in the near future. In addition, scarcity of human and financial resources across the public mental health sector is a powerful argument for investigating innovative alternatives for delivering services. Given the global shortage of psychiatrists and the lack of mental health care access in rural regions, mHealth technologies may represent a viable tool to bridge the mental health treatment gap and transform how treatments are delivered and accessed. This is a transformation that requires the combined mobilization of science, regulation, and design (Chandrashekar, 2018).

## Possible Benefits

Possible benefits for the use of the technology, from clinicians' and patients' perspectives, are presented in Table 16.3.

**Table 16.3** Benefits for the use of suicide prevention technology from clinicians' and patients' perspectives

Benefits for clinicians	Benefits for people at risk of suicide
Enable the collection of a great quantity of specific data to be used to customize interventions (Khan & Costanza, 2018).	Help overcome help-seeking barriers by reducing stigma and embarrassment, and social and geographical isolation (Melia et al., 2018).
Increase patients' own reflexivity, support their empowerment, and improve their involvement in the self-care process (Marzano et al., 2015).	Provide support to store data issued from <i>safety planning</i> interventions, tailored to personal needs and resources to empower patients to seek help during suicidal crises (Khan & Costanza, 2018).
Support, complement, and deliver personalized psychological interventions in a way that is more specific to one's needs, desires, expectations, and values – right time, right place, right way (Melia et al., 2018).	Provide support for <i>safety planning</i> interventions capable of identifying and managing vulnerabilities and delivering personalized resources during a suicidal crisis (Jobes et al., 2019).
Facilitate or increase access to and provision of health services in areas where there is little infrastructure or traditional health services, but where mobile communications technology infrastructure has been prioritized (WHO, 2016).	As part of the <i>caring contacts</i> , strategies post-ED help maintain and/or reinforce patients' supporting network from both a medical and personal standpoint. Provide support to guarantee a contact-person within patients' network of contacts in case of emergency (Betz et al., 2016).
The possibility of tracking mental health in a specific period of time or for many years (Aung, Matthews, & Choudhury, 2017).	Usefulness as a tool to monitor physical, psychological, and behavioral symptoms (Aung, Matthews, & Choudhury, 2017).

Note. ED = emergency department.

Technology should be envisioned as a tool that fits into what Larsen et al. (2016) identified as the basic ingredients for suicide prevention: a complex system approach that incorporates public health strategies, screening at-risk individuals, targeted interventions, and follow-up for suicide survivors and those bereaved by suicide. Moreover, the increasing ubiquity of sensor-enabled smartphones and the use of online social media platforms offer the potential for passive, background data collection, and automatic detection of suicidality and its associated risk factors (Larsen et al., 2016).

Ultimately, technologies are means to an end: they cannot substitute for clinical evaluation and human presence to support a suicidal individual, but they can be perceived and utilized as complementary tools to other interventions (Khan & Costanza, 2018).

## Self-Care Strategies That May Save Lives

### How Do They Survive?

Although technology does hold enormous potential in terms of detecting and preventing suicidal ideation, it is still difficult to provide relevant and meaningful assistance to those individuals who need help. However, many individuals already use online technologies to seek