Section I   Introduction

Chapter

1

Introduction

Kate M. Scott, Peter de Jonge, Dan J. Stein, Ronald C. Kessler

The study of the epidemiology of mental disorders in the World Health Organization (WHO) World Mental Health (WMH) surveys provides information on the prevalence and distribution of mental disorders in general populations around the world, together with much additional information on age-of-onset, severity, role impairment, treatment, and risk factors. This information is critically important for the improvement of population mental health. It provides foundational data for a wide array of interventions and policies ranging from the broad public health approaches of mental health promotion and prevention through to specialist mental health treatment and service delivery planning.

This volume is the fifth in the series of books on the WMH Surveys Initiative. The first volume, based on the first 17 countries to complete surveys, presented the epidemiology of mental disorders by country, allowing a country-specific description of methods and discussion of findings (Kessler and Üstün 2008). The next three volumes focused on specific topics within the broad field of psychiatric epidemiology: mental–physical comorbidity (Volume 2; Von Korff *et al.* 2009); suicide (Volume 3; Nock *et al.* 2012); and the disability and societal costs associated with mental disorders (Volume 4; Alonso *et al.* 2013). The current volume, based on 29 surveys conducted in 26 countries, takes a disorder-specific approach, presenting descriptive epidemiological data on a wide range of mental disorders as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV). A key feature of this volume is that a common set of statistical analyses devised specifically for this volume was used for all disorders, with just a few exceptions resulting from data constraints. Some of the findings have been published in journal articles and many are published here for the first time. This consistent approach to data analysis, building on the consistent, rigorous approach to survey methodology that is one of the great strengths of the WMH surveys, allows readers to make comparisons of epidemiological estimates across disorders and across countries.

The book is organized in three sections. The next chapter in this introductory section, Chapter 2, places the WMH surveys in historical context by outlining the development of psychiatric epidemiology, as well as the struggles of the field to reach consensus on how to define and measure mental ill-health. This chapter also provides a discussion of some of the methodological criticisms levelled at the WMH surveys and other studies using similar methods. Chapter 3 finishes the section with a detailed description of WMH methods, covering the many aspects of survey design and implementation, questionnaire development, and analytical approach. Methods chapters are often skipped as boring or too technical: we urge readers not to do so as this chapter offers a fascinating insight into the challenge and complexity of cross-national survey design and implementation.

Chapters 4–19 that comprise Section II of this book focus on specific disorders. Each chapter begins with an overview of the known epidemiology of the disorder and then presents and discusses the WMH findings on disorder prevalence, onset distributions, lifetime risk, impairment, socio-demographic correlates, comorbidity with other mental disorders, and service use. The tables provide results at increasing levels of aggregation: country-specific, aggregated across country income groups and WHO regions, and aggregated across all countries combined. Although the disorders are based on DSM-IV diagnoses, where changes in diagnostic criteria from DSM-IV to DSM-5 have occurred these are outlined and their implications discussed. As noted above, a core set of analyses was undertaken for all disorders, data permitting. But the chapters are nonetheless diverse, over and above their differing results. Additional analyses were undertaken for specific disorders where there were strong research imperatives to do so. Findings from earlier WMH analyses are also presented or discussed where relevant. A further factor contributing to variation across chapters is that they are written by a wide range of experts, who have used their knowledge of the specific disorders to select which findings to present and highlight.

1

Section I: Introduction

Some comment on disorder omissions and inclusions in Section II is in order. The WMH surveys assessed most of the major DSM-IV mental disorders, but not all. Schizophrenia and related psychotic disorders were not included in the surveys because they cannot be accurately assessed using fully structured lay-administered interviews in non-institutionalized populations. The neurodegenerative disorders of ageing were not assessed, nor were some of the rarer disorders, such as somatoform and dissociative disorders. Of the disorders that were assessed in the WMH surveys almost all have been included in this volume, with two exceptions. One omission is obsessive compulsive disorder, which was not measured by the WMH diagnostic interview with sufficient accuracy in all surveys. The other omission is anorexia nervosa, which was not included due to insufficient case numbers. The one chapter in Section II that is not focused on a DSM mental disorder is Chapter 19. We include this chapter because psychotic-like symptoms, occurring outside the context of a psychotic disorder, are a topic of increasing interest to the mental health research community.

The third section of the book moves from the disorder-specific perspective to a broader view encompassing all disorders in three chapters. Chapter 20 on comorbidity uses the WMH data to investigate what the observed patterns of comorbidity among mental disorders might signify in terms of underlying constructs or 'latent structure'. Although this topic has been extensively studied previously, this chapter is novel in the inclusion of such a wide range of mental disorders and in its examination of the cross-national stability of comorbidity patterns. Chapter 21 on service use examines how treatment seeking for mental health problems varies across disorders, across levels of disorder severity, and across socio-demographic groups. The findings of this chapter are an important testament to the gap between clinical need and treatment access, especially among those with lower education and income who are encountering barriers to accessing specialist mental health care, even when their mental disorders are severe. The cross-national perspective highlights that this gap between need and treatment uptake is particularly glaring in low-income countries.

Finally, Chapter 22 integrates and discusses the findings of the volume as a whole, presenting summary statistics for each disorder to allow a comparison across disorders and across countries. This chapter highlights the consistent patterns across countries emerging from the WMH data in when and in whom mental disorders present. The chapter also documents and discusses some provocative patterns of cross-national variation in disorder prevalence and impairment, although there are constraints on the interpretation of these patterns due to the difficulty of ensuring methodological consistency in a large cross-national study. The chapter closes with a discussion of the policy implications of the findings and future research directions.

Our hope is that this book will be of interest to a wide readership. It is likely to be of particular value to researchers, clinicians, students, and policy-makers in the fields of mental health and public health who want the most up-to-date information on the epidemiology of mental disorders cross-nationally. It is a unique resource for those with an interest in a specific mental disorder in its provision of detailed disorder-specific WMH findings that are discussed in the context of other published research on the disorder. The book also offers a mine of information for those who have more general questions, such as what the prevalence of mental disorders is and how prevalence varies across countries; at what age mental disorders tend to develop and who is at most risk; which mental disorders are most persistent and which are most disabling; and how treatment varies across individuals, disorders, service settings, and countries. Collectively, this body of information is an essential empirical foundation for policy and treatment initiatives in global mental health. Conducting cross-national comparative studies of mental disorders is immensely challenging but we believe that the wealth of findings presented in this volume is testament to the great value of doing so.

References

Alonso J., Chatterji S., He Y. (eds) (2013) *The Burdens of Mental Disorders: Global Perspectives from the WHO World Mental Health Surveys*. Cambridge University Press, New York.

Kessler R.C., Üstün T.B. (eds) (2008) *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders*. Cambridge University Press, New York.

Nock M.K., Borges G., Ono Y. (eds) (2012) *Suicide: Global Perspectives from the WHO World Mental Health Surveys*. Cambridge University Press, New York.

Von Korff M., Scott K.M., Gureje O. (eds) (2009) *Global Perspectives on Mental–Physical Comorbidity in the WHO World Mental Health Surveys*. Cambridge University Press, New York.

Chapter 2

The Cross-National Epidemiology of Mental Disorders

Dan J. Stein, Peter de Jonge, Ronald C. Kessler, Kate M. Scott

Introduction

Successive advances have been made in our understanding of the epidemiology of mental disorders over the past several decades. These gradual advances in our understanding in turn rest on a foundation of incremental progress in various areas, including conceptualization of mental disorders, community survey methodology and data analysis, and global collaborative research networks. The World Mental Health (WMH) Surveys Initiative, comprising the largest and most sophisticated coordinated set of community surveys on mental disorders to date, exemplifies the progress that has been made and provides a state-of-the-art portrayal of the epidemiology of mental disorders around the world. In this background chapter, we provide some relevant historical and theoretical context in order to outline the scope and value of the WMH surveys, and to address some key criticisms of the work.

Operationalization of Mental Disorders

Mental disorders have been recognized and described by clinicians for millennia (Kendler 2009). Hippocrates and many other physicians of the ancient world provided detailed descriptions of depression and alcohol dependence; conditions which we now include under the rubric of 'common mental disorders'. In the nineteenth century, Kraepelin and others working in mental hospital settings delineated psychotic disorders such as schizophrenia and bipolar disorder: entities that are now often termed 'serious mental disorders'. Freud, Janet, Westphal, and others working in outpatient settings described a range of anxiety and impulse-control disorders. Mental disorders were classified and categorized in early editions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), and of the *International Statistical Classification of Diseases* (ICD).

At the same time, by the middle of the twentieth century, a number of problems in psychiatric classifications were readily apparent (Spitzer *et al.* 1980).

A particularly important issue that came to light was disagreement between clinicians in different countries about the diagnosis of schizophrenia; in the United Kingdom there was a comparatively high threshold for diagnosis of this condition, while in the United States there was a much lower threshold (Cooper *et al.* 1969). Critics reported that healthy individuals who feigned mental illness could readily be admitted to a psychiatric hospital (Rosenhan 1973). In order to address these problems, researchers began to develop diagnostic criteria to operationalize psychiatric disorders; for example, the Feighner criteria were developed by Robins and colleagues and the Research Diagnostic Criteria were developed by Spitzer and colleagues (Kendler *et al.* 2010).

This work in turn provided the basis for the third edition of the DSM, published by the American Psychiatric Association in 1980. This volume, led by Spitzer, provided diagnostic criteria for a range of mental disorders and so enabled clinicians across the United States to more reliably determine the presence of diagnostic entities. The manual was translated into a range of languages and within a few years became the dominant nosology for psychiatric research across the globe. The diagnostic criteria were incorporated into clinician-administered diagnostic interviews, they formed the basis for inclusion criteria into clinical trials of pharmacotherapy and psychotherapy for mental disorders, and they provided a foundation for community and clinical surveys of mental disorders in a range of different settings.

Subsequent decades saw the publication of DSM-IV and DSM-5, as well as further revisions of the ICD. Whereas DSM-III broke new ground by providing a novel approach to the operationalization of mental disorders, DSM-IV and DSM-5 made incremental progress, with changes to the diagnostic criteria based on accumulating research (Frances *et al.* 1989). Thus, for example, high thresholds for the introduction of new disorders in DSM-IV and DSM-5 were set, and

3

the focus was on evidence-based refinement of the diagnostic criteria of existing mental disorders. DSM is produced by the American Psychiatric Association, and recent revisions have emphasized the importance of diagnostic validity (that is, going beyond the earlier emphasis on reliability of operational criteria to focus on evidence supporting the relevant construct) (Kupfer & Regier 2011). ICD is produced by the World Health Organization (WHO), and recent efforts at revision have emphasized the importance of clinical utility and of global applicability (Reed & Ayuso-Mateos 2011). Nevertheless, DSM-IV and the research version of ICD-10 have a good deal of overlap, and there are ongoing attempts to harmonize DSM-5 and ICD-11 (Regier *et al.* 2013).

Community Surveys Methodology

A range of advances in the methodology of community surveys have been crucial for contemporary epidemiology of mental disorders. Once diagnostic criteria had been developed for psychiatric disorders, an immediate question was whether they could feasibly be administered in the community, for example, by master's level clinicians (Weissman *et al.* 1978). A key advance was the development of a fully structured lay interview based on the Feighner criteria, the Research Diagnostic Criteria, and the DSM-III diagnostic criteria: the Diagnostic Interview Schedule (DIS) (Robins *et al.* 1984). Work on the DIS was supported by the National Institute of Mental Health Center for Epidemiological Studies, which funded the Epidemiological Catchment Area study in the United States; the first large multi-site community survey of mental disorders to be based on the new approach to the operationalization of mental disorders. Comparison of data from lay-administered interviews with independent clinician-administered interviews indicated acceptable reliability and validity.

Subsequent work on a new diagnostic instrument was undertaken by the WHO in collaboration with the US Alcohol, Drug, and Mental Health Administration in order to include criteria from the ICD, and to translate the instrument into a range of different languages (Kessler 2000b). This first version of the Composite International Diagnostic Interview (CIDI) was made available in 1990, and included both DSM-III and ICD-10 criteria, with subsequent versions incorporating DSM-III-R and DSM-IV diagnostic criteria. The CIDI has a range of features designed to improve the reliability and validity of the data obtained from

lay-administered interview, including efforts to increase respondent understanding, motivation, and ability to provide accurate survey responses (Kessler and Üstün 2004). Such features, and the concordance of the CIDI with clinical diagnosis, are discussed in more detail in the next chapter.

Prior to the DIS and CIDI, psychiatric epidemiology lagged behind work done in other areas of health. The DIS and CIDI allowed a new generation of psychiatric epidemiology research (Dohrenwend and Dohrenwend 1982), which employed operational definitions of mental disorders, and so provided rigorous data on their prevalence and correlates. A number of key lessons emerged from this new generation of studies, which include a range of surveys focusing on particular mental disorders, such as the National Vietnam Veterans Readjustment Study (Schlenger *et al.* 2007) and the National Epidemiological Survey on Alcohol and Related Conditions (Hasin & Grant 2015). First, depression, anxiety disorders, and substance-use disorders are highly prevalent conditions in the United States. Second, these disorders have an early age-of-onset, protracted course, and high comorbidity. Third, mental disorders are associated with significant impairment, as well as high costs to society. Finally, mental disorders are significantly under-diagnosed and under-treated.

The new generation of epidemiological research on mental disorders has also provided a series of lessons about particular mental disorders. Consider, for example, some key findings on anxiety disorders (Kessler *et al.* 2010). First, data on prevalence of different psychiatric disorders has emphasized that anxiety disorders are the most common class of psychiatric disorders, perhaps speaking to the adaptive value of fear responses (Stein & Nesse 2011). Second, data on onset and course have emphasized that many anxiety disorders precede mood and substance-use disorders, so emphasizing the potential clinical value of early recognition and robust treatment (Goodwin & Gorman 2002). Third, data on comorbidity have emphasized that depression and generalized anxiety disorder (GAD) have similarly high levels of comorbidity and of associated impairment; such work has contributed to the conceptualization of GAD as an independent diagnostic entity (Kessler 2000a). Fourth, work on the treatment gap in anxiety disorders has given impetus to the emergence of consumer advocacy organizations that work to promote awareness of these conditions (Stein *et al.* 2001). Analogous lessons have emerged for a range of psychiatric conditions.

4

Global Collaborative Research Networks

Soon after the development of the DIS, studies were undertaken with this instrument in a number of different countries (Weissman *et al.* 1994, 1996). The CIDI, based on a newer version of the DSM, and including ICD diagnostic criteria, was developed with the explicit aim of being translated into a range of different languages and being used in different regions of the globe, with modifications being made to ensure cross-cultural compatibility – including a range of work to address cross-national variations in the vocabulary of distress (see also Chapter 3). Comparison of data from across countries allows an initial approach to the question of how the prevalence and correlates of mental disorders differ across different contexts. However, in order to fully exploit the richness of data from different contexts and countries, international consortia that gather and pool such data are needed. Fortunately, such work has advanced in the past two decades.

Surveys using the DIS and DSM-III criteria in a limited number of countries suggested that although there were some differences in prevalence of mental disorders across different contexts, the conditions assessed (mood, anxiety, and substance-use disorders) were common, and individuals with these conditions had substantial unmet treatment needs (Weissman *et al.* 1994, 1996). Given that the WHO focuses on the ICD for its work on data gathering and policy formulation, this organization created a cross-national network of researchers using the CIDI in different countries, the WHO International Consortium in Psychiatric Epidemiology (ICPE) (2000). Data from the ICPE emphasized the high prevalence, early onset, substantial persistence, and high comorbidity of mental disorders in a range of different settings. In addition, however, ICPE investigators were able to pool epidemiological data to provide input on questions about risk of disorders; thus for example an ICPE analysis of predictors of onset and persistence of GAD found that history of specific phobia may be a risk marker for GAD onset (Kessler *et al.* 2002).

A revision of the CIDI in the late 1990s provided the impetus for the WHO to establish the WMH Surveys Initiative, and to encourage countries around the world to use the revised CIDI to undertake nationally representative surveys. Grants from a number of agencies, including the National Institutes of Health in the United States allowed the creation of a core infrastructure for the Initiative, so leveraging expertise and allowing cost-saving for participating countries. Many low and middle-income countries, which had not previously participated in psychiatric epidemiological research and which lacked both financial and human resources to undertake such work, were now able to conduct high-quality and large-scale community surveys, and to build capacity in psychiatric epidemiology. The WMH Surveys Initiative now comprises over 30 countries, and includes more than 150,000 respondents (see Chapter 3).

The WMH surveys have brought enormous scope and value to psychiatric epidemiology, providing, for the first time, rigorous data on the prevalence and correlates of a range of mental disorders in a wide range of low, middle, and high-income countries. Notably, coincident with the collection, analysis, and publication of this new body of data, we have witnessed the emergence of the new field of global mental health (Patel 2012; Becker & Kleinman 2013). Indeed, just as epidemiology can be conceptualized as a key pillar of public health, so work such as that of the WMH surveys and the Global Burden of Disease study (GBD Collaborators, Murray *et al.* 2015) has provided a foundation for global mental health, which in turn has emphasized the high disability due to mental disorders, and the large treatment gap associated with these conditions. The WMH Surveys Initiative has provided a key evidence base for the clarion call of global mental health for 'no health without mental health' (Prince *et al.* 2007).

Criticisms of Contemporary Psychiatric Nosology and Epidemiology

The operationalization of mental disorders provided by DSM and ICD, advances in survey methodology outlined earlier, and the development of global collaborative research networks such as the WMH surveys all lay the foundation for remaining chapters of this volume to describe the cross-national epidemiology of a wide range of mood, anxiety, substance-use, and disruptive behaviour/impulse-control disorders. At the same time, it is relevant to consider a number of the key criticisms of these foundations, and so of the work described in this volume. We consider in turn, some related criticisms of contemporary psychiatric nosology, of the approach of the WMH surveys, and of the employment of the CIDI across different regions of the world.

Section I: Introduction

Criticisms of current psychiatric nosology include those emphasizing the reification of mental disorders, artefactual comorbidity, and vested interests. Some argue that psychiatrists now use checklists to make diagnoses; they are unaware of symptoms not listed in DSM, and they fail to appreciate that diagnostic criteria are merely an hypothesis about how a disorder most commonly presents – for any particular patient current diagnostic constructs may not serve well (Hyman 2010; Kendler 2016). Patients often have more than one DSM diagnosis, which suggests that some of this comorbidity is artefactual in nature (Maj 2005). Neuroscientifically minded critics have argued that some of these flaws reflect the fact that diagnostic operationalizations are not sufficiently based on biological discoveries; neuro-circuitry-based constructs, it has been suggested, may ultimately provide a more valid and useful foundation for assessment and treatment (Insel *et al.* 2010). More sceptical critics have argued that more disorders translate into increased sales, and that psychiatry has colluded with the pharmaceutical industry to inappropriately apply Western diagnostic constructs in non-Western contexts, ignoring the issue of fundamental differences in the structure of distress and psychopathology across the globe, and instead medicalizing non-pathological distress and deviance (Moynihan *et al.* 2002; Stein 2015).

Certainly, the diagnostic operationalization embedded in contemporary psychiatric nosology reflects the status of our current knowledge of mental disorders. At the same time, considerable effort has been made to establish and to improve the diagnostic validity and clinical utility of modern diagnostic constructs (Reed & Ayuso-Mateos 2011; Regier *et al.* 2013). Such efforts avoid reification by focusing on the evidence in support of contrasting diagnostic conceptualizations and operationalizations, fully accepting that symptoms lie on dimensions and that disorders have fuzzy boundaries with non-disorder and with one another. Conflicts of interest are rigorously addressed, and participation of a broad range of stakeholders is vigorously encouraged (Stein & Phillips 2013). While new biologically based conceptual frameworks such as the Research Domain Criteria (RDoC) may well be useful in informing future research (Cuthbert & Insel 2010), it is by no means clear that superior diagnostic constructs for clinical work will easily be found (Stein 2014). Indeed it is unlikely that the next editions of DSM and ICD will represent a paradigm shift; it is much more likely that they will represent iterative improvement (Kendler & First 2010).

Related criticisms have been made of both the WMH surveys and of global mental health; emphasizing that psychiatric epidemiology and public mental health are flawed insofar as they rely on DSM and ICD operationalizations (Summerfield 2012). On the one hand, some critics have argued that given that we already know that mental disorders are highly prevalent and under-diagnosed and under-treated, the WMH surveys add little that is new (Weich & Araya 2004). On the other hand, others argue that WMH and global mental health have inflated the prevalence of mental disorders and their associated disability; the argument is that policy-makers should not be misled by such data, and should be careful not to conflate psychological distress with medical disorder (Summerfield 2012). Those who are less sceptical of contemporary psychiatric nosology and epidemiology still have a range of other criticisms. These include that the CIDI takes insufficient account of cultural idioms of distress, that the reliance on recall biases age-of-onset and lifetime prevalence estimations, and that the cross-sectional design of the WMH surveys makes it difficult for causal factors underlying mental disorders to be delineated.

While it is important to be aware of the limitations of any scientific research and consequent efforts at advocacy, the sophistication of the WMH surveys and of efforts in global mental health should not be underestimated. Although it is true that WMH surveys have relied on DSM and ICD diagnostic conceptualizations and operationalizations, they have also made important contributions to psychiatric nosology by rigorously comparing different diagnostic constructs (Ruscio *et al.* 2007; Lee *et al.* 2009; Karam *et al.* 2010; Stein *et al.* 2010, 2013; McLaughlin *et al.* 2015). Relatedly, WMH surveys have documented how the symptoms of common mental disorders lie on dimensions, and have contributed to psychiatric nosology by evaluating the impact of choosing different cut-points and thresholds for determining the presence of disorders. Finally, the WMH surveys have expended significant energy on addressing cross-national variations in the vocabulary of distress, in optimizing recall of symptoms, and in improving analyses of risk and resilience factors (see Chapter 3). Similarly, the discipline of global mental health has emphasized the importance for public health of appreciating the range that spans serious mental disorders, psychological distress, and well-being, and of addressing the specific social and cultural context within which psychiatric symptoms emerge.

6

Indeed, we would argue that in a number of respects there has been significant convergence between nosological advances, clinical neuroscience, psychiatric epidemiology, and global mental health; this convergence has helped address critiques of contemporary psychiatric theory, and has contributed to strengthening clinical practice and mental health policy. Thus, for example, the question of how to define a case has long been debated in each of these arenas. The WMH surveys have made an important contribution to this issue by measuring symptom severity of specific mental disorders, by paying particular attention to the question of how best to delineate subthreshold from clinical symptomatology, and by providing an evidence base for proposals to improve the operationalization of diagnostic entities in DSM and ICD. Relatedly, an emphasis on the dimensional nature of psychiatric symptomology has been a key issue in psychiatric nosology, clinical neuroscience, psychiatric epidemiology, and global mental health. Thus DSM-5 introduced new chapters on related psychiatric conditions, emphasized that psychiatric symptoms lie on dimensions of severity and are present across disorders, and provided a range of trans-diagnostic symptom measures. RDoC has emphasized that symptoms lie on dimensions and cut across different disorders; and WMH analyses have investigated different cut-points and thresholds for determining mental disorder.

Conclusion

The subsequent chapters of this volume provide data on the cross-national descriptive epidemiology of a wide range of mental disorders. Certainly our epidemiological data are only as good as our current study instruments, as the memory of survey respondents permits, and as their willingness to participate fully in the interview process allows. Still, notwithstanding the limitations of current diagnostic operationalizations, survey methodology, and global research collaborative networks, these data provide the most comprehensive available perspective on the prevalence and distribution of mental disorders around the world. Taken together, they provide a compelling picture of the burden of mental disorders and of the treatment gap; information that is crucial for those working to improve mental health policies and services. At the same time, the data are an important bridge across the classical divide between psychiatric epidemiology and clinical practice, asking and answering a range of important questions about the prevalence and correlates of mental disorders, and providing clinicians with key facts and figures about the most important conditions seen in everyday work. We believe that the wealth of analyses provided in this volume comprise an important step in the evolution of epidemiological research on mental disorders. Our hope is that they also provide a foundation from which to evaluate future policy and clinical interventions aimed at increasing access to and effectiveness of mental disorder treatments.

References

Becker, A.E. and Kleinman, A. (2013). Mental health and the global agenda. *New England Journal of Medicine*, 369, 1380–1.

Cooper, J.E., Kendell, R.E., Gurland, B.J., *et al.* (1969). Cross-national study of diagnosis of the mental disorders: some results from the first comparative investigation. *American Journal of Psychiatry*, 10 Suppl, 21–9.

Cuthbert, B. and Insel, T. (2010). The data of diagnosis: new approaches to psychiatric classification. *Psychiatry*, 73, 311–4.

Dohrenwend, B.P. and Dohrenwend, B.S. (1982). Perspectives on the past and future of psychiatric epidemiology. The 1981 Rema Lapouse Lecture. *American Journal of Public Health*, 72, 1271–9.

Frances, A.J., Widiger, T.A., and Pincus, H.A. (1989). The development of DSM-IV. *Archives of General Psychiatry*, 46, 373–5.

GBD Collaborators, Murray, C.J., Barber, R.M., *et al.* (2015). Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. *Lancet*, 386, 2145–91

Goodwin, R.D. and Gorman, J.M. (2002). Psychopharmacologic treatment of generalized anxiety disorder and the risk of major depression. *American Journal of Psychiatry*, 159, 1935–7.

Hasin, D.S. and Grant, B.F. (2015). The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) Waves 1 and 2: review and summary of findings. *Social Psychiatry and Psychiatric Epidemiology*, 50, 1609–40.

Hyman, S.E. (2010). The diagnosis of mental disorders: the problem of reification. *Annual Review of Clinical Psychology*, 6, 155–79.

Insel, T., Cuthbert, B., Garvey, M., *et al.* (2010). Research domain criteria (RDoC): toward a new classification framework for research on mental disorders. *American Journal of Psychiatry*, 167, 748–51.

Karam, E.G., Andrews, G., Bromet, E., *et al.* (2010). The role of criterion A2 in the DSM-IV diagnosis of posttraumatic stress disorder. *Biological Psychiatry*, 68, 465–73.

Kendler, K.S. (2009). An historical framework for psychiatric nosology. *Psychological Medicine*, 39, 1935–41.

(2016). The phenomenology of major depression and the representativeness and nature of DSM criteria. *American Journal of Psychiatry*, 173, 771–80.

Kendler, K.S. and First, M.B. (2010). Alternative futures for the DSM revision process: iteration v. paradigm shift. *British Journal of Psychiatry*, 197, 263–5.

Kendler, K.S., Munoz, R.A., and Murphy, G. (2010). The development of the Feighner criteria: a historical perspective. *American Journal of Psychiatry*, 167, 134–42.

Kessler, R.C. (2000a). The epidemiology of pure and comorbid generalized anxiety disorder: a review and evaluation of recent research. *Acta Psychiatrica Scandinavica Supplementum*, 7–13.
   (2000b). Psychiatric epidemiology: selected recent advances and future directions. *Bulletin of the World Health Organization*, 78, 464–74.

Kessler, R.C., Andrade, L.H., Bijl, R.V., *et al.* (2002). The effects of co-morbidity on the onset and persistence of generalized anxiety disorder in the ICPE surveys. International Consortium in Psychiatric Epidemiology. *Psychological Medicine*, 32, 1213–25.

Kessler, R.C., Ruscio, A.M., Shear, K., *et al.* (2010). Epidemiology of anxiety disorders. *Current Topics in Behavioral Neurosciences*, 2, 21–35.

Kessler, R.C. and Üstün, T.B. (2004). The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*, 13, 93–121.

Kupfer, D.J. and Regier, D.A. (2011). Neuroscience, clinical evidence, and the future of psychiatric classification in DSM-5. *American Journal of Psychiatry*, 168, 672–4.

Lee, S., Tsang, A., Ruscio, A.M., *et al.* (2009). Implications of modifying the duration requirement of generalized anxiety disorder in developed and developing countries. *Psychological Medicine*, 39, 1163–76.

Maj, M. (2005). "Psychiatric comorbidity": an artefact of current diagnostic systems? *British Journal of Psychiatry*, 186, 182–4.

McLaughlin, K.A., Koenen, K.C., Friedman, M.J., *et al.* (2015). Subthreshold posttraumatic stress disorder in the World Health Organization World Mental Health Surveys. *Biological Psychiatry*, 77, 375–84.

Moynihan, R., Heath, I., and Henry, D. (2002). Selling sickness: the pharmaceutical industry and disease mongering. *British Medical Journal*, 324, 886–91.

Patel, V. (2012). Global mental health: from science to action. *Harvard Review of Psychiatry*, 20, 6–12.

Prince, M., Patel, V., Saxena, S., *et al.* (2007). No health without mental health. *Lancet*, 370, 859–77.

Reed, G.M. and Ayuso-Mateos, J.L. (2011). Towards a more clinically useful International World Health Organisation classification of mental disorders. *Revista Psiquiatria Salud Mental*, 4, 113–6.

Regier, D.A., Kuhl, E.A., and Kupfer, D.J. (2013). The DSM-5: classification and criteria changes. *Official Journal of the World Psychiatric Association*, 12, 92–8.

Robins, L.N., Helzer, J.E., Weissman, M.M., *et al.* (1984). Lifetime prevalence of specific psychiatric disorders in three sites. *Archives of General Psychiatry*, 41, 949–58.

Rosenhan, D.L. (1973). On being sane in insane places. *Science*, 179, 250–8.

Ruscio, A.M., Chiu, W.T., Roy-Byrne, P., *et al.* (2007). Broadening the definition of generalized anxiety disorder: effects on prevalence and associations with other disorders in the National Comorbidity Survey Replication. *Journal of Anxiety Disorders*, 21, 662–76.

Schlenger, W.E., Kulka, R.A., Fairbank, J.A., *et al.* (2007). The psychological risks of Vietnam: the NVVRS perspective. *Journal of Traumatic Stress*, 20, 467–79.

Spitzer, R.L., Williams, J.B., and Skodol, A.E. (1980). DSM-III: the major achievements and an overview. *American Journal of Psychiatry*, 137, 151–64.

Stein, D.J. (2014). An integrative approach to psychiatric diagnosis and research. *World Psychiatry*, 13, 51–3.
   (2015). Disorder versus deviance: where to draw the boundary? *Philosophy, Psychiatry and Psychology*, 21, 262–5.

Stein, D.J., Koenen, K.C., Friedman, M.J., *et al.* (2013). Dissociation in Posttraumatic Stress Disorder: evidence from the World Mental Health Surveys. *Biological Psychiatry*, 73, 302–12.

Stein, D.J. and Nesse, R.M. (2011). Threat detection, precautionary responses, and anxiety disorders. *Neuroscience and Biobehavioral Reviews*, 35, 1075–9.

Stein, D.J. and Phillips, K.A. (2013). Patient advocacy and DSM-5. *BMC Medicine*, 11, 133.

Stein, D.J., Ruscio, A.M., Lee, S., *et al.* (2010). Subtyping social anxiety disorder in developed and developing countries. *Depression and Anxiety*, 27, 390–403.

Stein, D.J., Wessels, C., Zungu-Dirwayi, N., *et al.* (2001). Value and effectiveness of consumer advocacy groups: a survey of the anxiety disorders support group in South Africa. *Depression and Anxiety*, 13, 105–7.

Summerfield, D. (2012). Afterword: against "global mental health". *Transcultural Psychiatry*, 49, 519–30.

Weich, S. and Araya, R. (2004). International and regional variation in the prevalence of common mental disorders: do we need more surveys? *British Journal of Psychiatry*, 184, 289–90.

Weissman, M.M., Bland, R.C., Canino, G.J., *et al.* (1994). The cross national epidemiology of obsessive compulsive disorder. The Cross National Collaborative Group. *Journal of Clinical Psychiatry*, 55 Suppl, 5–10.
   (1996). The cross-national epidemiology of social phobia: a preliminary report. *International Clinical Psychopharmacology*, 11 Suppl 3, 9–14.

Weissman, M.M., Myers, J.K., and Harding, P.S. (1978). Psychiatric disorders in a U.S. urban community: 1975–1976. *American Journal of Psychiatry*, 135, 459–62.

WHO International Consortium in Psychiatric Epidemiology (2000). Cross-national comparisons of the prevalences and correlates of mental disorders. WHO International Consortium in Psychiatric Epidemiology. *Bulletin of the World Health Organization*, 78, 413–26.

8

Methods of the World Mental Health Surveys

Ronald C. Kessler, Steven G. Heeringa, Beth-Ellen Pennell,
Nancy A. Sampson, Alan M. Zaslavsky

Introduction

The World Mental Health (WMH) Surveys Initiative is a World Health Organization (WHO) initiative designed to help countries carry out and analyse epidemiological surveys of the burden of mental disorders in their populations (www.hcp.med.harvard.edu/wmh). This chapter provides a broad overview of the methods used in the surveys. Throughout the chapter we emphasize the consistent aspects of sampling, data collection, measurement, and analysis that were used across all WMH surveys. The core of the standardized procedures used in all these areas was the use of the same diagnostic interview, the WHO Composite International Diagnostic Interview (CIDI) version 3.0 (Kessler & Üstün 2004). The CIDI is a fully structured research diagnostic interview designed for use by trained lay interviewers who do not have clinical experience. The version of the CIDI used in the surveys reported here generates diagnoses of mental disorders according to the definitions and criteria of both the 10th edition of the *International Statistical Classification of Diseases and Related Health Problems* (ICD-10) and 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) systems, although only DSM-IV criteria are used here. Consistent WHO translation, back-translation, and harmonization procedures were used to modify the CIDI for use in each WMH country (Harkness *et al.* 2008). The same interviewer training materials, training programmes, and quality control monitoring procedures were also used across WMH surveys to guarantee cross-survey comparability of data (Pennell *et al.* 2008).

The use of these standardized procedures has been critical for WMH success, as a core mission of WMH is to allow countries that might not otherwise be able to implement mental health needs assessment surveys to do so by building on the existing WMH infrastructure. The use of standardized materials reduces costs for each country and makes it easier to implement high-quality surveys by building on tried and true procedures. This applies not only to instrumentation and data collection but also to analysis, as WMH uses a centralized data processing and cross-national peer consultation model to allow less experienced collaborators to work with world-class statisticians and psychiatric epidemiologists to analyse, interpret, and write scientific reports about their data.

The WMH Samples

The sampling procedures used in the WMH surveys are closely related to those originally developed for the World Fertility Survey (WFS) programme, one of the first and largest efforts to coordinate a global gathering of survey data (Verma, Scott & O'Muircheartaigh 1980). The decisions made in developing sample designs for the WMH surveys drew heavily on the lessons of the WFS experience. Like the WFS and more recent successful international programmes of community survey research, the WMH surveys required collaborating countries to employ probability sample designs to select nationally or regionally representative samples of adults for the survey interview. The aim of sampling in the WMH surveys was to obtain a representative sample of the household population in the country or region under study. This usually involved drawing a multi-stage clustered area probability sample of households in the population and then selecting one, or in some cases two, respondents from each sampled household using probability methods without replacement. These sample designs were standardized across countries based on the principles of probability sampling, but with less emphasis placed on the specific probability sample design features employed across countries in recognition of the fact that countries varied widely in the information available to develop a sample frame from which the WMH sample could be selected.

In order to achieve the level of coordination in sampling required across countries, we established a WMH Data Collection Coordination Centre at the Institute

for Social Research (ISR) at the University of Michigan in the United States. The Survey Research Center (SRC) at ISR is one of the leading academic survey research organizations in the world, with a long history of leadership in the development and implementation of large community surveys (www.src.isr.umich.edu). The Survey Sampling group at SRC, under the direction of Steve Heeringa, supervised WMH sampling, while the Survey Implementation group, under the supervision of Beth-Ellen Pennell, supervised WMH interviewer training and field implementation.

Focusing first on sampling, the SRC group began by developing a list containing a common set of requirements and performance standards that the probability sample design in each WMH survey was required to meet. Unique opportunities available in individual countries were then used to develop a sampling plan that achieved these requirements and to meet the WMH standards. The staff of the WMH Data Collection Coordination Centre worked closely with local collaborators to develop these sample design plans. The plans were reviewed by a panel of technical experts and then revised based on feedback from this panel. Once the design was finalized, day-to-day oversight of implementation was the responsibility of the local research team.

Most WMH countries developed a similar sampling plan that featured multistage area probability sampling. Several countries, though, adopted alternative probability sampling procedures, such as the use of a national registry or combined uses of area probability methods and registry sampling to achieve the required probability sampling of the designated target population. All these samples, though, were probability samples. No WMH survey used a convenience sample, an interviewer-managed quota sample, or any other non-probability method of sample selection.

The Target Populations

Probability sample surveys are designed to describe a *target population* of elements that spans a specific geographic space during a specific window of time. Although it might seem obvious how to do this, a number of important considerations arise as soon as one begins to consider the possibilities. Should persons who were temporary residents, guest workers, or those who had legal claim to medical treatment or services be included in the sample? What about people who were incapable of participating in the survey because they were institutionalized, or cognitively or physically impaired, and what about people living in remote places that would require disproportionate amounts of survey resources to sample and interview? In the end, a decision was made to allow the answers to these questions to vary across countries within a range of options described below.

The *survey population* is defined as the subset of the target population that is truly eligible for sampling under the survey design (Groves *et al.* 2004). A decision was needed to decide what restrictions would apply in each participating WMH country to establish a survey population definition that would conform to the survey's scientific objectives, available sample frames, and budget limitations. Multiple dimensions were included here. One of these involved the age range of the sample. WMH was designed to focus on adults. However, the age that defines adulthood (commonly referred to as the 'age of majority') varies across countries (most typically either 18 or 21). In addition, some countries decided to impose an upper age limit on the sample (usually 65). Other dimensions that defined the survey population involved geographic scope limitations (most typically excluding otherwise eligible people who lived in remote areas of the country), language restrictions, citizenship requirements, and whether to include special populations such as persons living in military barracks and group quarters or persons who were institutionalized at the time of the survey (e.g., hospital patients, prison inmates). These varied somewhat across countries.

Table 3.1 provides a summary of the survey populations for the 29 WMH surveys included in this volume. Starting with the different age limits, the vast majority of the surveys had a minimum age of 18 years. The lowest minimum age was age 16 (New Zealand, although analysis of the New Zealand data is restricted to respondents 18 and above in cross-national reports for comparability with other countries) and the oldest was 21 (Israel). For maximum age requirements, Colombia, Mexico, and the regional surveys carried out in Beijing and Shanghai mandated that respondents be no older than 65 or 70. Turning to the geographic scope of the survey population, 19 of the 29 surveys defined the geographic scope of their survey population as the entire country, whereas the Nigerian survey was restricted to specific regions and the national surveys in Colombia and Mexico were restricted to urban places above a specified population size (e.g., more than 2,500 persons in Mexico). A few surveys, finally, were restricted to specific metropolitan areas. These included the