

The Promise of Cultural Epidemiology

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An emerging field of cultural epidemiology, rooted in the illness explanatory model framework, has developed integrated quantitative and qualitative research methods to harness synergies of interdisciplinary collaboration in psychiatric epidemiology and medical anthropology. The formulation of cultural epidemiology presented here may be understood as the epidemiology and elaboration of illness explanatory models. It has been defined as the study of locally valid representations of illness and their distribution, motivated by aims to enhance the cultural sensitivity and quality of clinical care, health services and other mental health and global health interests. Reflection on the academic, clinical and public health contexts in which concepts and methods of our approach to cultural epidemiology developed, and a review of explanatory model studies of mental health and other health problems provide an opportunity to clarify origins, achievements and challenges for research and anticipated contributions to cultural psychiatry, mental health and global health.

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Introduction

The disciplines of anthropology and epidemiology are the basic sciences of cultural psychiatry, and consideration of their complementary relationship has motivated and nurtured development of the field of cultural epidemiology. Although initially conceived as an approach to research for cultural psychiatry, cultural epidemiology has demonstrated broader utility in other areas of medicine and public health. Rooted in the illness explanatory model framework of Arthur Kleinman

[1], the approach presented in this overview has been described as an epidemiology of explanatory models [2].

In the early 1970s as the field of psychiatric epidemiology was establishing itself, leaders of psychiatry acknowledged the relevance of culture. Norman Sartorius advised, “The methodology of studies of the inter-relationship between culture and mental disorders needs to be further developed” [3]. But bridging the qualitative ethnographic interests of explanatory models, as initially conceived by Kleinman, and the quantitative epidemiological accounts of the burden of mental

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health problems, as conceptualized in the field of psychiatric epidemiology, has been challenging.

Cultural epidemiology studies locally valid representations of illness (i.e., key features of explanatory models) and their distribution [4, 5]. These representations are elaborated by variables, descriptions and narratives accounting for the experience of illness, its meaning and associated illness behavior. Qualitative and quantitative research methods facilitate comparisons and clarify the cultural basis of risk, course and outcomes of practical significance for clinical practice and public health.

The integration of qualitative and quantitative methods to achieve these ends has been an important contribution towards fulfilling the promise of cultural epidemiology. Both orientations contribute to a practical understanding of the magnitude, nature and implications of the burden of mental health problems. Clarity in that regard is needed both to support advocacy interests that justify strategic priority and funding support, and to guide culturally sensitive clinical practice and relevant public health action. In this overview, we explain the underlying concepts and methods of cultural epidemiology, and examine various instruments (especially EMIC interviews), research designs and their relationship to complementary clinical tools.

Conceptual Underpinnings

Classical epidemiology, including psychiatric epidemiology, typically documents rates and determinants of selected health problems. It thereby indicates their priority and hopefully what to do about them. Much of the medical literature begins with an account of the epidemiology that motivates and justifies attention to a particular topic. Clinical interests of medical anthropology often

focus on the ways people understand illness (i.e., illness explanatory models) and themselves (i.e., cultural identity of individuals, their families, communities and other groups they belong to). Epidemiological inquiries are primarily quantitative and empirical; anthropological studies are more likely to be qualitative and ethnographic, and to rely on insights and interpretation of field experience. Both fields, however, acknowledge the priority of field research, and the term ‘shoe-leather epidemiology’ distinguishes field epidemiology from database studies, just as ethnography may be distinguished from anthropological study of intellectual history.

Bridging the complementary approaches of empirical epidemiology and experience-based, insight-oriented anthropology enables synergies for research that benefit public health and clinical practice. That premise has motivated interdisciplinary study and cultural epidemiology for cultural psychiatry. Several fundamental concepts in the field of medical anthropology have been essential considerations in developing the field. They include the framework of “emic and etic” orientations for social analysis, the distinction of “disease and illness,” and the conceptual framework of illness explanatory models.

Emic and etic

Consideration of “emic and etic” orientations for social analysis has become a widely accepted way of distinguishing frameworks derived from professional study (etic outsider) and those based on the lived experience of people and communities (emic insider). Kenneth Pike, a linguistic anthropologist, introduced the terms in 1954 based on extension of complementary phonemic and phonetic orientations for linguistic analysis [6]. A phoneme is a basic unit of meaning within a particular language as it is understood by native

speakers. Phonetics refers to study of speech based on a comprehensive collection of elemental sounds of speech derived from professional consideration of all languages.

Initially, the question of whether to take the emic view as a serious consideration for social analysis was controversial. It was dismissed by some in disparaging terms as unprofessional, sloppy and unsuitable for intellectual study. The controversy was addressed in a debate organized as a symposium at the annual meeting of the American Anthropological Association in 1988 [7]. By 1990 when the proceedings were published in a book, but widespread use was already well-documented, as Headland explained:

Most practicing anthropologists today use insights about the differing perceptions of reality of different subcultural groups as a principal – if not the principal – conceptual tool of their trade. The emic/etic distinction, then, underlies one of the basic contributions of modern anthropology to the working world (i.e., the ability to understand and interpret other cultures). Many anthropologists, in fact, if not other social scientists, may owe their jobs to their ability to make the distinction between emic and etic. [7 (Ch 1, reprinted online <www-01.sil.org/~headlandt/ee-intro.htm>)].

The first chapter of the proceedings presented the history of usage of the terms. The framework had become pervasive and not just in the field of anthropology. He argued, “The terms diffused into other branches of science during the 70s and at the same time became common words in the English language” [7]. With regard to medical anthropology and psychiatry, simply put, elaboration of indigenous cultural categories of men-

tal illness or local ideas about a medical problem constitutes an emic account. The *ICD-10* and the *DSM-5* nosologies, on the other hand, are professional catalogues that elaborate etic frameworks.

Disease and illness

In the context of serious efforts by the latter half of the 1970s to construct a robust medical anthropology, Kleinman asserted that new conceptual models, such as that of “disease and illness,” were needed to bridge the disjunction of “biological reductionist and cultural relativist approaches ... endemic to anthropological and cross-cultural studies in the health field” [8]. The outsider/professional vis-à-vis insider/local formulation suggested by the emic-etic conceptualization found its way into medical anthropological thinking – tacitly, unacknowledged and not completely so at this early stage – by redefining “disease and illness” as technical terms. “Disease” referred to the professional understanding of particular health problems, and “illness” referred to personal experience of these problems, their meaning and impact. The first article in the first issue of *Culture, Medicine and Psychiatry* in 1977 elaborated this “new conceptual model of disease and illness” [9].

Although Pike’s and Eisenberg’s conceptual models referred to similar dichotomous interests, their respective linguistic and clinical origins were clearly different. Eisenberg was concerned with paradigms for psychiatric practice, namely, organic, psychodynamic, behavioural and social models. The domain of illness was associated with social models and the others were glossed as scientific. But he also highlighted the priority and the clinical responsibility of taking a patient’s experience seriously. He admonished, “When physicians dismiss illness because ascertainable “disease” is absent, they fail to meet their socially assigned responsibility. It is essential to reinte-

grate “scientific” and “social” concepts of disease and illness as a basis for a functional system of medical research and care [9]. The two were complementary and attention to both was required.

The question of ensuring adequate attention to the social and cultural features of illness in research and clinical practice motivated further development and rethinking of the conceptualization. Hahn reviewed the anthropological disease/illness distinction and problems arising from inconsistent usage during a period when the details of their relationship were actively contested [10]. But current understanding of the distinction is clearly consistent with the emic-etic framework that has been adapted for practical interests of an agenda for medicine and health. This emic concept, illness distinguished from etic concepts of disease, may also be understood as a point of reference for Kleinman’s illness explanatory model, though he did not present it in those terms.

Illness explanatory models

The term “explanatory model” (without Kleinman’s explicit or implied reference to “illness”) is widely used in various disciplines and settings to describe or explain a set of relationships and to represent objects, ideas, experiences and theories. In the field of neuroscience and mental health, professionals may refer to explanatory models of psychiatry and psychiatric illness [11], statistical models [12] and explanatory models of various mental health problems and clinical management issues [13-15]. The validity and value of such models is based on research findings, professional experience and academic study. In any field, theoretical models tend to be valued most for whether they accurately account for observable data and for their predictive capacity to relate explanatory variables and outcomes. Representational models are valued for how well they make

something big or complex visible or more readily understandable. They provide accessible metaphors for inaccessible objects or concepts. There may be considerable overlap, of course, in the representational and predictive interests of any particular scientific explanatory models.

Kleinman’s formulation of “explanatory models of illness” is different from these scientific explanatory models. His book *Patients and Healers in the Context of Culture*, which provided an early comprehensive presentation of the explanatory model framework, is regarded as “one of the most influential books in medical anthropology and the social sciences of medicine” [16]. In it, illness explanatory models are defined as “notions about an episode of sickness and its treatment that are employed by all those engaged in the clinical process” [1, p 105]. They differ from etic scientific explanatory models insofar as they refer to the understanding of people affected by health problems rather than the understanding of health professionals called upon to treat or prevent these problems by virtue of clinical training and professional expertise. Furthermore, his explanatory models refer explicitly to illness episodes rather than general illness beliefs, theories or a systematized ethnomedicine. They acknowledge the “vagueness, multiplicity of meanings, frequent changes, and lack of sharp boundaries between ideas and experiences are characteristic of lay EMs [i.e., explanatory models]” [1, p 107].

Kleinman argued for their relevance with reference to five core clinical functions. They provided an approach to bringing anthropology into the clinic, and a means of overcoming outdated approaches to cross-cultural psychiatry that focused on the exotic examples of far-away problems [17]. Limiting the scope of the field to “primitive concepts of disease,” as it was in the 1930s [18], was no longer acceptable. He initially re-

garded the illness explanatory model to train clinicians in the principles and practice of mini-ethnography, which they might then integrate in their practice. He also considered the framework as a tool for “ethnomedical” study, though he later became sceptical of that. In 1995 he wrote, “Clinically, the explanatory model approach may continue to be useful, but ethnography has fortunately moved well beyond this early formulation” [19, p 9].

Developing skills for clinically applied ethnography (i.e., “mini-ethnography” in Kleinman’s terms) provided a way to engage with patients and thereby ensure relevant consideration of culture for effective medical care. He reaffirmed the approach in 2006, suggesting it would help to overcome inherent limitations of the increasingly popular concept of “cultural competency” [20]. Training for “competence,” he argued, must not be reduced to a checklist approach that failed to address the fundamental questions of “What’s at stake?” for a patient and family. Clinical assessment of explanatory models in the framework of mini-ethnography should be a start, rather than an end, of the clinical conversation.

Illness Explanatory Model Research on Psychiatry and Mental Health Problems

Notwithstanding later reservations about the explanatory model for ethnomedical study, the approach became a popular and influential framework for research in medical anthropology, and it remains so in the field of cultural psychiatry. Many of the initial studies were published in *CMP*. To clarify the scope and coverage of this literature, I undertook a PubMed literature search to identify indexed articles through 2015 with “explanatory model (or models)” and either “psy-

chiatry” or “mental health” as an index subject heading. Abstracts of the 461 articles retrieved by the search were reviewed to weed out those dealing with etic scientific explanatory models, and 275 (60%) that referred to emic illness explanatory models were identified [2].

In the 1980s, the first decade of these explanatory model studies concerned with mental health problems, 14 of 18 were published in *CMP* and 4 in *Social Science and Medicine*. The first of these studies appeared in *CMP* authored by Dan Blumhagen. It distinguished “popular belief systems” (ethnomedicine) from “expert belief systems” (scientific theory) in a study comparing illness explanatory models of 117 people with “Hyper-Tension” with professional concepts of hypertension [21]. The study examined cognitive domains of hypertension, perceived causes, mechanisms, outcome and the rôle of various stressors and psychological symptoms. The analytic framework comparing popular and professional models was consistent with research interests in explanatory model studies of patients and healers.

Other early explanatory model research included a study by Mark Nichter showing the relevance of an idioms-of-distress approach to psychiatric evaluation. Attending to questions of gender and culture, he highlighted the prominence of somatization among findings in expressing distress among Havik Brahmin women in South India, and the rôle of weak or inaccessible social support [22]. Atwood Gaines developed an ethnographic study of beliefs and practices of five so-called Christian psychiatrists. This contribution to cultural psychiatry focused on psychiatric practice and the explanatory models of practitioners, rather than patients’ explanatory models or congruence with those of their clinicians [23]. Cecil Helman, a general practitioner and medical anthropologist in London, assessed the explanatory models of 42

patients with respiratory and gastrointestinal illnesses, and considered clinical implications. His analysis melded insights from his dual vantage point as both a clinician and anthropologist [24]. Focusing on the dualistic implications of “psychosomatic” disorders, he distinguished the priority of somatic symptoms for his patients and the tendency of clinicians to “psychologize” these symptoms.

The literature over the years indicates increasing research interest in explanatory models of various mental health problems, including common mental disorders [25], somatization and neurasthenia [26], schizophrenia and other psychoses [27], suicide [28], substance abuse and addictive disorders [29], epilepsy and seizure disorders [30], dementia [31], personality disorders [32] and the psychosocial impact of primary medical disorders [33]. Stigma has also been a longstanding and cross-cutting interest of explanatory model studies of mental health problems [34, 35], and it has become an important interest of cultural epidemiology. In the context of global mental health, Patel and colleagues recently suggested that study of explanatory models is relevant for practical consideration of “demand-side barriers” to mental health services in India and China [36].

Conceptualizing Cultural Epidemiology

Efforts to enable collaboration across disciplines involved some measure of clarification and/or simplification of premises and methods of anthropology and epidemiology. Like all interdisciplinary encounters, it has been a formidable challenge to ensure respectful collaboration that is neither simplistic nor rigidly parochial in its own self-regard. Many of the more successful studies of illness explanatory models, indicated above,

were attentive to such values of interdisciplinary engagement associated with efforts to advance cultural epidemiology, whether identified with that term explicitly, like ours, or implicitly in the explanatory model research of other researchers.

It should also be acknowledged, however, that our focus on illness explanatory models is not the only relevant framework for explanatory model research and cultural epidemiology. Other cultural aspects of being for which distributions and health impact are important include essential features of the cultural identity of individuals and groups; cultural characteristics of contexts, situations and responses are also relevant considerations for health impact. Cultural factors that affect epidemiological measurement and the validity of data, and cultural factors that affect the risk, course and outcomes of health problems are all relevant issues for cultural epidemiology.

Historically, Rudolf Virchow’s anthropological and epidemiological analysis of the social and political determinants of a typhoid epidemic, he investigated in Upper Silesia in 1848, and Emile Durkheim’s landmark analysis of social features, determinants and types of suicide are considered among early examples of cultural epidemiology. They are discussed by Jim Trostle in his analysis of the origins of the links between epidemiology and culture [37]. Another important landmark in the field, is the experience and impact of the Pholela Health Centre in South Africa, established in 1940, which used field-based methods of applied medical anthropology and field epidemiology for community-oriented primary health care [37].

The Pholela experience was highlighted in a landmark collection of case studies, *Health, Culture and Community*, published by Benjamin Paul in 1955. Paul referred to an influential remark by a malariologist, Samuel Darling, who

worked on the Panama Canal project: “If you wish to control mosquitoes ... you must learn to think like a mosquito.” Explaining its significance, he wrote, “It applies not only to mosquito populations one seeks to damage but also to human populations one hopes to benefit” [38]. The case studies emphasized the value of attending to culture and community, not just professional expertise, to achieve worthwhile aims of health and development. Like the clinical explanatory model approach, the community case studies demonstrated the relevance of experience and priorities of patients and families, rather than relying solely on the expertise of doctors and other health professionals.

Despite the indicated benefits of linking health science and social science, like other interdisciplinary endeavours, excitement and optimism have also been tempered by scepticism and pessimism at the interface among both anthropologists and epidemiologists [19]. Examining the limits of interdisciplinary encounters, Srivastava, an anthropologist, was wary of inherent vulnerabilities of cross-disciplinary anthropologies, like medical anthropology. To better understand not just the opportunities but also the pitfalls, he called for detailed accounts of the professional experiences of medical anthropologists “working in a hospital or medical college, and trying to justify ... [a] place amidst those who might consider such positions as sheer appendages, easily dispensable” [39, p 548]. Di Giacomo reported on such an experience in an academic institution working with cancer epidemiologists in Spain. Based on that, she argued against the possibility of a cultural epidemiology in “the naturalist epistemology of Western institutional medicine” [40].

Other anthropologists working in clinical settings, have been more positive and optimistic about prospects for interdisciplinary integration

and collaboration. In a chapter examining the question of whether conceptual underpinnings of anthropology and epidemiology are inevitably in conflict or reconcilable, Hahn argues that “the underlying logics of anthropology and epidemiology have much in common and that practices developed in each discipline are necessary complements to practices in the other” [41, p 99].

Cultural epidemiology of explanatory models

Development of our approach to cultural epidemiology transpired during a seminal period of innovation in the fields of cultural psychiatry, medical anthropology and psychiatric epidemiology. A willingness to rethink assumptions and question disciplinary boundaries was shaped by Kleinman’s “new cross-cultural psychiatry” [42], the new biopsychosocial medical model of George Engel [43], the distinction of disease and illness and the illness explanatory model frameworks described above. Developments in the then-emerging field of psychiatric epidemiology, exemplified by the international pilot study of schizophrenia [44] and the epidemiological catchment area study in the U.S.A. [45], also motivated development of EMIC interviews to complement etic diagnostic with emic cultural considerations. Our research designs, assessment methods and analytic strategies endeavored to consider experience and to apply insights and lessons from both psychiatric epidemiology and medical anthropology to meet research needs, invigorating cultural psychiatry.

The confluence of these seminal developments in both fields in the early 1980s stimulated my work as a cultural psychiatrist and post-doctoral health social scientist. The interdisciplinary program in medical anthropology and cultural psychiatry in the Department of Social Medicine and Health Policy at Harvard Medical School en-

couraged the agenda, as did experience developing a course on cultural dimensions of international health at the Harvard School of Public Health. The setting was conducive for harnessing clinical scholarship, epidemiological principles and health social science in a joint effort to develop the EMIC framework. Inasmuch as we were working outside the comfort zones of clinical, epidemiological and anthropological research, we needed a conceptual framework to integrate experience across disciplines.

To proceed with early efforts to construct instruments that became the EMIC framework, we needed to think through principles of assessment, that is, how to frame questions, code responses, preserve narratives and manage unified quantitative and qualitative datasets. We needed to develop an appropriately complex but sufficiently manageable approach to defining variables for representing relevant features of explanatory models (e.g., categories of distress, perceived causes, treatment preferences and related interests), recognizing that a single explanatory model variable would be simplistic. We carefully considered the limits of what could be coded and quantified, and what should remain as a narrative component in our datasets. We also needed strategies for quantitative analysis (e.g., the concept of prominence), qualitative analysis (e.g., thematic deductive and inductive coding) and integrating these quantitative and qualitative interests.

Strategies for using qualitative data management software to support thematic analysis of narratives held promise, though their capacity by the 1990s was rudimentary by today's standards. Although quantitative and qualitative methodologists were familiar with many of the respective quantitative and qualitative management and analytic tasks, our goal was to go a step further and formulate strategies to relate the qualitative and

quantitative components of coherent datasets in a unified analysis; we endeavored to move beyond mixed methods to integrated methods. Acquiring experience in the research group through research partnerships, refining our research strategies, closely following technological developments in the software and emerging prospects for enhancing mutual tolerance of qualitative and quantitative methodologies all helped confront the challenges.

EMIC Interviews as Instruments for Cultural Epidemiology

Development of our explanatory model interviews began in the mid 1980s, producing a set of localized instruments with a common semi-structured interview framework that were collectively and individually known as EMIC (Explanatory Model Interview Catalogue). The acronym highlights their focus on “emic” illness explanatory models. The reference to “catalogue” highlights plurality, thereby distinguishing the priority of locally adapting EMIC interviews from expectations of a single standardized instrument for use in all settings, as commonly expected for instruments used in psychiatric epidemiological research and psychometric instruments for clinical assessment.

Kleinman had earlier suggested a topical framework for explanatory model interviewing in a footnote of *Patients and Healers* [1, P 106]. The framework was also presented in a slightly modified form about 25 years later for his recommended approach to clinical anthropology [20] Being open-ended, the questions supported an agenda for clinical ethnographic interviews.

The earlier guide was used in many explanatory model studies either as published or modified

Table 1. Adaptable generic EMIC interview framework.

Sections organized by topic	Framework for questions and dataset
Name of illness	<ul style="list-style-type: none"> • Narrative and categories • Provides name or descriptive account for subsequent questions
Patterns of distress	<ul style="list-style-type: none"> • Narrative and coding for spontaneously reported categories, acknowledged in response to category probed and category identified as most troubling • Prominence coding for categories based on how reported
Perceived causes	<ul style="list-style-type: none"> • Narrative and coding for spontaneously reported categories, acknowledged in response to category probed and category identified as most important • Prominence coding for categories based on how reported
Help seeking	<ul style="list-style-type: none"> • Narrative and reported categories of help at home, prior help seeking outside home and current preferences • Distinguish first and most important sources of help and derive prominence for analysis
Stigma	<ul style="list-style-type: none"> • Narrative and assessment of Indicators of relevant features of stigma • Each item coded for prominence based on level of affirmation of stigma, and combined as index
Additional topics based on study-specific aims and interests	<ul style="list-style-type: none"> • Questions based on agenda of topical interests • Format guided by framework for thematically coded narrative and coding categories of response, based on strategy indicated above

with attribution. It also provided a reference point for the agenda covered in developing EMIC interviews for cultural epidemiological study. Unlike the intended qualitative ethnographic use of Kleinman’s guide, the EMIC interviews were constructed both to enable epidemiological coding and to preserve narrative responses, either from notes prepared by a researcher during the interview and/or audio recordings for reference and/or transcription. Although covering a roughly consistent topical agenda of the framework, it was expected that the semi-structured interview would be adapted for any particular study to meet the needs defined by setting and study aims, to thereby ensure appropriate scope, localized formulation of questions and coding categories. The framework that emerged from efforts to construct these early EMIC interviews is outlined (Table 1).

Each topical section (e.g., respondent-prioritized features of distress, perceived causes) typi-

cally begins with an open-ended question followed by category-specific probing queries, so that unprompted and prompted responses may be distinguished in analysis. A summary question concludes (i.e., most troubling concern, most important perceived cause, etc.). Strategic weighting based on whether and how a category is reported enables analysis of its prominence. Thematic analysis of the collection of narratives of narratives enables qualitative elaboration and links to interviews of selective respondents with particular categorical response codes.

The approach enables descriptive and comparative analytic study. It also provides a quantitative means of analysing how relevant features of explanatory models, strategically configured as variables, may explain outcomes of practical clinical or public health significance. Such outcomes may include timely help seeking, help-seeking and treatment preferences, adherence to treatment, changes in symptomatology, self-perceived

stigma, indicators of recovery and so forth. Datasets from studies using these EMIC interviews typically include variables based on fields coded during the interview and available for quantitative analysis as coded, or reconfigured (e.g., for prominence) in the course of analysis.

Integrating qualitative and quantitative methods

The datasets also include narrative data, which are typically coded thematically, first deductively according to the topic of the interview question and then based on a coding structure determined by analytic priorities and content. Use of qualitative data analytic software enables referencing narratives and/or thematically coded segments to variables of the dataset as a way to select records for strategically planned analysis. The integrated approach provides a means of elaborating quantitative findings with narratives, and a way to examine quantitative distributions of variables that show how widespread notable views of qualitative accounts actually are in the dataset.

The development of software for integrated qualitative and quantitative data management and analysis (especially MAXQDA) has contributed to research capacity for integrated methods. Recent EMIC interviews are now designed for use with tablet computers, and their accuracy and appeal have been validated in a study comparing tablet and traditional paper-based versions of the same interview [46].

Audio recording the interviews on the tablet device with time stamps that are entered with each screen swipe indicates the point of the interview on the recording in response to each question. This approach enables programming question-based first-level thematic coding of the audio files. It not only facilitates quick access to topically focused audio segments and their transcription into

coded text, it also enables access to coded audio for analysis even before audio recordings are transcribed.

EMIC-interview Studies

These EMIC interviews were initially developed through research partnerships in India and the Department of Social Medicine and Health Policy (now Global Health and Social Medicine) at Harvard Medical School. The first EMIC interview was prepared for research on leprosy and mental health at the KEM Hospital in Mumbai in collaboration with DR Doongaji. The study examined explanatory models of leprosy and associated mental health impact (depression, anxiety and somatoform disorders). It also examined the relationship of particular perceived causes to follow-up clinic attendance for treatment of leprosy [47].

Research at the National Institute of Mental Health and Neuro Science (NIMHANS) in Bangalore with R. Raguram and S. Jadhav followed. We examined explanatory models as the basis for a clinical ethnography of psychiatric disorders, studies of stigma and cultural dimensions of depression [34, 48]. The approach developed for study of stigma has been used for other mental health problems at NIMHANS, including schizophrenia [49], mental health problems in other settings [35] and for stigmatized infectious diseases [50-52].

By 1996, 20 EMIC-interview studies had been undertaken on various topics in cultural psychiatry, mental health, epilepsy, suicide and deliberate self-harm. A multi-country study of disorders of neurasthenia, chronic fatigue syndrome and other conditions characterized by medically unexplained fatigue and weakness is particularly noteworthy with regard to Pacific Rim research in the United States (Los Angeles), Canada

(Toronto), Taiwan (Kaohsiung), PR China (Changsha) and Hong Kong [53]. Keh-Ming Lin, who developed the consortium, compared findings across sites [54]. The research of an Indian group, whose subsequent inclusion extended cross-cultural experience to South Asia, recommended including the collection of comparable conditions in different settings under the heading of neurasthenia spectrum disorders (NSDs). Paralikar and colleagues also compared explanatory models in four outpatient specialty clinics in Pune (psychiatry, medicine, Ayurveda and dermatology) [26, 55].

In addition to research on various clinical disorders, suicide and deliberate self-harm (DSH) became another important mental health research interest. Adaptations of the EMIC interview focused on underlying problems and triggers of suicidal behavior. Cultural epidemiological studies of DSH have examined accounts of survivors of DSH and family survivors of a relative's suicide. Research in urban Mumbai identified gender-related differences in respondents' reasons for DSH (e.g., personality problems were more often reported by women; and alcohol, work and financial problems were more often reported by men). Research experience led to development of an approach to sociocultural autopsy [28, 56]. In the rural Sundarban region of West Bengal, such research contributed to community suicide prevention campaigns [57].

Other global health interests

My move to the Swiss Tropical Institute in 1995 (renamed Swiss Tropical and Public Health Institute, Swiss TPH, in 2010) brought additional opportunities and encouragement to expand research activities in areas of infectious tropical disease control. Cross-cutting interests in gender, stigma and community behaviour were further

encouraged by collaboration with the WHO Special Programme for Research and Training in Tropical Diseases (TDR). Several TDR projects involved use of cultural epidemiological methods to document community impact and stigma of onchocercal skin diseases [52]; gender, stigma and timely help-seeking for tuberculosis [50, 58, 59]; perceived causes of childhood fever affecting timely treatment to prevent malaria mortality in Ghana [60]; and stigma and services for Buruli ulcer in Ghana [61, 62]. Related studies in the Middle-East examined stigma and condom use for HIV/AIDS in Jordan [63].

In recent years, partnership with WHO's Initiative for Vaccine Research has supported cultural epidemiology studies to improve vaccine coverage by assessing and addressing social and cultural concepts of illness, vaccines and trust in health systems. With the introduction of improved oral cholera vaccines (OCV) for endemic populations, not just travellers, a study of uptake in a mass vaccination campaign using OCV in Zanzibar showed how local experience of cholera and other factors affected vaccine priority [64]. Additional studies of anticipated OCV uptake using comparable methods were undertaken in Western Kenya and DR Congo [65]. Cultural epidemiological studies of influenza vaccine coverage in India in the pandemic of 2009 have shown that ideas about community hesitancy invoked to explain limited coverage in Western Europe and North America may be less influential in India than access, health system priorities for vaccination and clinician prescribing practices [66].

Alternative Strategies for Explanatory Model Research

Our EMIC interview framework for cultural epidemiology has not been the only approach for

explanatory model research, and other instruments and methods have also been developed for use beyond a single study. Some attended to complementary quantitative and qualitative interests, like the EMIC, and others focused either on quantitative or qualitative methods rather than attempting to integrate both. The Short Explanatory Model Interview (SEMI) integrates qualitative assessment with quantitative analysis, and various adaptations have been used in many studies [67]. In an effort to simplify coding at the time of the interview, the SEMI comprised a series of open-ended questions covering an agenda similar to EMIC interviews. Categories of perceived causes, priority symptoms and help-seeking experience are coded after the interview based on notes and transcripts. The tables reporting results from SEMI interviews typically refer to frequency of reporting without consideration of prominence [68]. Extensive use of the SEMI has made important contributions to explanatory model research consistent with the framework of cultural epidemiology, although these studies do not explicitly refer to the term.

An alternative approach that aims to simplify explanatory model research methods involves use of solely quantitative instruments and study designs. The BARTS Explanatory Model Inventory – Checklist (BEMI-C) is an instrument derived from experience with a more comprehensive explanatory model interview. Bhui and colleagues explain that clinical aims for use of the instrument and implicit concern about the labour of a mini-ethnography justify the format of the BEMI-C, because “clinicians do not usually have the time and resources to undertake a detailed and unstructured exploration of EMs [explanatory models] or qualitative data analysis” [69, p 965]. This point, however, may blur research and clinical objectives of the instrument.

Other exclusively quantitative instruments for explanatory model research include the Mental Distress Explanatory Model Questionnaire (MDEMQ) developed by Eisenbruch [70] and the Explanatory Model Association Task (EMAT) developed by Ghane and colleagues, which was intended to serve as an indirect assessment [71]. Neither has been widely used, however, beyond initial validation studies.

A purely qualitative instrument for assessing illness narratives has been used in a number of other studies. The McGill Illness Narrative Interview (MINI) includes consideration of explanatory models within the scope of its 46-item theory-driven agenda, and it relies on “more intensive methods of narrative and discourse analysis” [72]. Although topical interests of the MINI are well within the scope of the illness explanatory model framework, the ideology and methodological orientation of the MINI appear to recommend an alternative to epidemiological study, cultural or otherwise.

Related Clinical Tools

Our approach to cultural epidemiology and EMIC interview designs anticipated practical value from translation of the research experience into enhanced capacity for culturally sensitive clinical practice. Such expectations were already clear to clinician-researchers working with the methods [73]. For broader impact in translating benefits of research into practice, however, more systematic efforts were required to engage practitioners who were not already convinced of its value. Development of the Outline for Cultural Formulation (OCF) for *DSM-IV* and the Cultural Formulation Interview (CFI) for *DSM-5* has helped to bring cultural considerations farther along towards mainstream clinical practice.

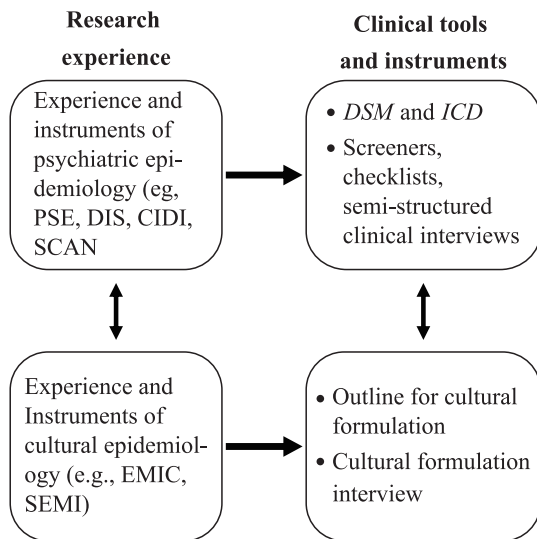


Figure 1. Translating research instruments into clinical tools. PSE, Present State Examination; DIS, Diagnostic Interview Schedule; CIDI, Composite International Diagnostic Interview; SCAN, Schedules for Clinical Assessment in Neuropsychiatry; *DSM*, *Diagnostic and Statistical Manual for Mental Disorders*; *ICD*, *International Classification for Diseases*.

The OCF was based on a framework that considered the cultural identity of a patient, an emic account (illness explanatory model) of the patient’s illness, the role of stressors and supports in the social and cultural environment and the intercultural relationship between the clinician and the patient [74]. As an outline relegated to the back of the *DSM-IV* manual in the penultimate appendix, it had limited impact on mainstream training and practice [75]. The *DSM-5* intended not only to update the OCF but also to develop the CFI to make the OCF more accessible and appealing to clinicians; it was important to present the core instrument in the body of the *DSM* and to validate that instrument for feasibility, acceptability and clinical utility in a set of international field trials [76, 77]. Supplementary modules further enhanced the CFI.

EMIC interview instruments are carefully structured to facilitate assessment, coding and analysable data from many interviews. The priority of the CFI, however, is primarily concerned with clinical aims of assessing a patient, fostering a treatment alliance and proceeding with a treatment plan for that patient. The layout of the CFI is therefore structured to facilitate productive interaction with a patient but without clear attention to the acquisition, maintenance and analysis of a dataset for research. The priority for a clinical interview is based more on what happens in the interview, and the value of a research interview is based more on the quality, validity and usefulness of the dataset.

An effective clinical interview that benefits a patient may nevertheless be a poor research interview if it fails to provide relevant documentation. Similarly, a useful research interaction may lack clinical benefits for a patient—and such considerations are notable on the agenda for ethical review of proposed research. Although careful attention to the formulation of questions for clinical and research assessments are common interests, the respective rationale for each reflects different priorities of purpose and intended use.

Prospects and Promise

Critical questions confronting mental health and global health benefit from consideration of cultural epidemiology. Research strategies to address these priorities, however, require an interdisciplinary set of skills that extend traditional health science and social science curricula. Recognizing a need for training and capacity building, our research group developed a curriculum for cultural epidemiology, and a course was first offered at the Swiss TPH in 2005. Workshops have also been conducted at partner institutions in

India, Australia, Kenya and South Africa. Sustaining these activities, however, is challenging, and it is hoped that recent innovations and improved technologies may motivate commitment to realize potential.

The logic and benefits of synergies from linking anthropology and epidemiology as complementary basic sciences for mental health and global health are compelling and ultimately perhaps inexorable. Although the approach outlined here is one among others for bringing benefits of medical anthropology to clinical practice and public health, as acknowledged in the course of this overview, it is hoped that reflection on our experience will contribute to strategies, further capacity and achievements of this important interdisciplinary agenda.

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