

Ecosystems and Human Health

Crescentia Y. Dakubo

Ecosystems and Human Health

A Critical Approach to Ecohealth Research and Practice

 Springer

Crescentia Y. Dakubo, Ph.D
Thunder Bay, Ontario, Canada
crescentia.dakubo@gmail.com

ISBN 978-1-4419-0205-4

e-ISBN 978-1-4419-0206-1

DOI 10.1007/978-1-4419-0206-1

Springer New York Dordrecht Heidelberg London

Library of Congress Control Number: 2010937571

© Springer Science+Business Media, LLC 2011

All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer Science+Business Media, LLC, 233 Spring Street, New York, NY 10013, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed is forbidden.

The use in this publication of trade names, trademarks, service marks, and similar terms, even if they are not identified as such, is not to be taken as an expression of opinion as to whether or not they are subject to proprietary rights.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The 2005 Millennium Ecosystem Assessment report observes that about sixty per cent of the world's ecosystem services are being degraded or used unsustainably. The report observes that over the past half a century, human activities have transformed natural ecosystems at a pace faster and extensive than in any comparable time in human history. This pace of ecosystem degradation has grave consequences for human health, including the emergence of new diseases. Since the 1970s, new diseases have been emerging at an unprecedented rate of one or more per year, with the World Health Organization confirming over 1100 epidemic events worldwide, within the past few years alone. It is anticipated that over the next few decades ecological factors will continue to play a key role in the emergence of new diseases and augment the impacts of older ones.

Since the Earth Summit in Rio in 1992, there have been increasing efforts aimed at drawing attention to the intricate interconnections and interdependencies between environment, health, and sustainable development, culminating with the recent climate change summit in Copenhagen. While these connections are being acknowledged in global and regional policy documents, their translation to influence and respond to public health and environmental problems at the lower scale still remains a challenge. For example, the health impacts of environmental degradation are experienced at the local or community level, with many public health settings struggling to contain these effects and the widespread of newer diseases. Similarly, researchers are exploring effective analytical frameworks that will provide a comprehensive understanding of the interconnections between the social, political, and natural dimensions of the environment.

These challenges and the growing emphasis on the important role of ecological factors in shaping human health, present a compelling case for rethinking current public health strategies. The intricate linkages between the social and natural components of the ecosystem require that we revisit the early 19th century's emphasis on promoting human health from a holistic and ecological perspective. While past public health research and practice sought to adopt a broader, socio-ecological view of health and to focus on broader determinants of health, the focus on individual level factors has continued to prevail, with ecological determinants receiving peripheral attention. The public health threats presented by ecological factors, now and in

the future, leaves us with little choice but to refocus our efforts on identifying and developing strategies at the interface of public health and environmental management; strategies that will improve human health through the sustainable management of ecosystems.

This renewed way of thinking about improving public health has resulted in the emergence of new paradigms, such as the *ecosystem approach to human health*, or the *ecohealth approach*, the subject of this book. The ecosystem approach to human health bridges thinking in the public health and the natural resources management fields, and explores ways to understand and manage the various components of the ecosystem so as to improve human health and well-being. The ecohealth approach seeks to promote a holistic view of health, with environmental sustainability as a major component of this overall well-being. The ecohealth approach encourages research, practice and policy that aim to improve human health and well-being through better ecosystem management interventions. The emphasis on both human health and ecosystem health underscores the interdependencies between the two systems, and provides a means for achieving broader goals of sustainable development.

From a research perspective, the ecohealth approach integrates indigenous perspectives with the views of experts from the natural, social, and health sciences, to investigate and respond to problems at the interface of environment and health. The approach makes use of a transdisciplinary team of researchers who engage relevant stakeholders and beneficiaries of the problem under investigation in all aspects of the research process. Participatory research procedures are central to the ecohealth approach, with the ultimate goal of generating increased understanding of the causal basis of ecologically-mediated health problems, and to raise people's consciousness to respond to their health concerns in a proactive manner.

Since the 1990s, the concept of an ecosystem approach to human health has been gaining widespread attention. A number of institutions around the world have begun to adopt the ecosystem approach to promote public health. For example, in Canada, the International Development Research Centre (IDRC) can be referred to as a pioneer in spearheading the application of this approach in developing countries, and in developing Communities of Practice around the world. Some medical schools have also begun to incorporate ecohealth concepts and principles into their curricula.

However, as an emerging field, ecohealth lacks the theoretical rigor that is often seen in other public health sub-disciplines such as medical sociology, health geography, and medical anthropology. Most often than not, the conventional ecohealth literature adopts concepts and notions of "health", "ecosystem degradation", and "community participation" without re-evaluating how these are constructed, and how social and political framings are woven into these constructions. Also, the causal basis of ecosystem degradation tends to be attributed to factors such as rapid population growth, "inappropriate" land use practices, and poverty, without considering how these factors have been shaped by unequal power relations that characterize human-environment relationships and represent coping strategies and forms of resistance. Similarly, ecosystem-mediated health problems tend to be attributed to "inappropriate" interactions with the biophysical environment and

consequently exposure to disease vectors and pathogens, while failing to take into account the socio-political factors that caused the disease-prone environment in the first place. In addition, it is important that attention be paid to how we construct subject positions such as the “sick” and “healthy”. These constructions need to be evaluated through the lens of how ecohealth is deployed as a discourse, and taking care to ensure that ecohealth knowledge claims are transparent.

This book is designed to take ecohealth research and practice to this next level, the adoption of a critical lens. The book draws on critical social theory to examine public health and environmental problems. In particular, it draws on theoretical perspectives from political ecology (of health), the sociology of science, poststructuralism, postcolonial, and feminist theories as applied in public health and environmental discourses. Building on these, the book lays the contours for a new framework – *A Critical Approach to Ecohealth Research and Practice*, which bridges thinking in critical public health and critical political ecology.

In addition to proposing a critical lens to ecohealth research and practice, the book walks students, researchers, and practitioners through the practical processes of conducting an ecohealth research project, from gaining entry into the research site or community, to conducting a culturally and socio-politically conscious research project.

The case studies presented in this book draw on my experience as an ecohealth research practitioner and explore the methodological and ethical challenges mostly encountered when embarking on a community-based ecohealth research project. The application of the ecohealth approach to Indigenous health concerns is also explored, as well as an examination of on-going efforts by global and regional initiatives to integrate environment and health policy and to link this with broader public policies.

For purposes of organization, this book has been divided into four parts. Part I – Ecohealth: The Ecosystem Approach to Human Health, which includes [Chapters 1, 2, and 3](#), and reviews the literature on the linkages between health and environment and traces the events in both the public health and environmental fields that led to the re-emergence of the ecosystem approaches to public health. It also describes the key concepts and principles of the ecosystem approaches to human health. Part II – Methodological Approaches and Processes to Conducting Ecohealth Research, which includes [Chapters 4 and 5](#) describes the methodological approaches and processes for conducting ecohealth research. It outlines the key elements and principles of community-based participatory action research and a healthy community strategic planning process. In addition, it describes a step-by-step, practical approach to conducting an ecohealth research, from forming a transdisciplinary research team to collaboratively analyzing and implementing the research findings. Part III – Case Studies: Application of the Ecohealth Approach, which includes [Chapters 6, 7, 8, 9, and 10](#) examines the application of the ecohealth approach to investigating environment and health concerns. [Chapters 6 and 7](#) present the findings of an ecohealth project that was conducted in a West African community, and discusses how political ecology and community strategic planning

processes were used to help a community investigate and respond to its environment and health challenges, and also plan for a healthy community. Drawing on the case studies presented, [Chapter 8](#) explores some of the methodological and ethical challenges encountered when conducting an ecohealth project. [Chapter 9](#) explores the application of the ecohealth approach to Indigenous environmental health concerns. [Chapter 10](#) examines how efforts are being made regionally and globally to develop integrated health and environment policy frameworks and to translate these to inform programming at the local level. Part IV – A Critical Approach to Ecohealth Research and Practice, which includes [Chapters 11, 12, 13, and 14](#) lays the foundation for a critical approach to ecohealth research and practice. It explores the key elements of critical social theory, examines how these are applied to environment and public health issues, and then articulates a critical framework for ecohealth research and practice.

As one of the first books to introduce the concept of a critical approach to ecohealth research and practice, the goal of this book, then, is to not only introduce students, researchers, and practitioners to the ecosystems approach to human health, but also to stimulate critical thinking and the application of critical theoretical perspectives to examining the complexities surrounding people, environment and health relationships. It is through the adoption of such a critical lens, that we are able to produce knowledge claims that are socially and ecologically relevant, as well as develop interventions that are liberating and not constraining.

This book could not have come to fruition without the support of my family, friends, colleagues and mentors. In particular, I am grateful to the examining board and academic committee of my doctoral dissertation, who encouraged me to put down, in the form of a book, my transdisciplinary training and experience and to stimulate this new line of thought in the emerging field of ecohealth. My heartfelt gratitude goes to my family – Collins, Ethan, Bernard, Zaneta, and my dedicated husband Gabriel, for their continuous support and encouragement.

Thunder Bay, ON, Canada

Crescentia Y. Dakubo

Contents

Part I Ecohealth: The Ecosystem Approach to Human Health

1 Exploring the Linkages Between Ecosystems and Human Health	3
1.1 Introduction	3
1.2 Ecosystem Services and Human Health	7
1.3 Land Fragmentation and Health	9
1.4 Water Resource Development and Health	10
1.5 Urbanization and Health	12
1.6 Modern Food Production Systems and Health	13
1.7 Climate Change and Health	14
1.8 Wars, Conflicts and Health	16
1.9 Conclusion	16
References	17
2 Evolution Towards an Ecosystem Approach to Public Health	21
2.1 Introduction	21
2.2 “Old” Public Health and the Biomedical Approach	22
2.3 The “New” Public Health and Ecological Approaches	25
2.4 Integrated Approaches to Natural Resource Management	27
2.5 Making the Links with Sustainable Development	29
2.6 Modeling Human Health from an Ecosystem Perspective	30
2.7 Towards Critical Public Health	33
2.8 Conclusion	34
References	34
3 Ecosystem Approaches to Human Health: Key Concepts and Principles	37
3.1 Introduction	37
3.2 The Concept of Human Health	40
3.3 The Concept of Ecosystem	41
3.4 Assessing the Health of Ecosystems	43

3.5 The Ecosystem Approach to Human Health: Key Issues 44

3.6 The Ecohealth Research Framework 46

 3.6.1 Integrating Transdisciplinary, Indigenous, and Stakeholder Perspectives 48

 3.6.2 Making use of Collaborative and Inclusive Processes 49

 3.6.3 Taking Heterogeneity and Difference into Account 49

 3.6.4 Historicizing Environment and Health Problems 50

 3.6.5 Infusing Critical Social Theory into Ecohealth Research 50

3.7 Conclusion 51

References 51

Part II Methodological Approaches and Processes for Conducting Ecohealth Research

4 Community-Based Participatory Research for Ecohealth 57

 4.1 Introduction 57

 4.2 Participatory Action Research 59

 4.3 Being Critical About Participatory Research Approaches 61

 4.3.1 Being Critical About “Community” 62

 4.3.2 Being Critical about “Participation” 64

 4.3.3 Being Critical About “Empowerment” 65

 4.4 Conclusion 66

References 67

5 The Process of Conducting an Ecohealth Research Project: A Participatory Action Research Approach 71

 5.1 Introduction 71

 5.2 Gaining Entry into the Research Community 73

 5.3 Forming a Transdisciplinary Research Team 74

 5.4 Recruiting Research Participants 76

 5.5 Data Gathering Processes 77

 5.6 Focus Group Discussions 79

 5.7 Follow-up and In-depth Individual Interviews 79

 5.8 Strategic Planning for a Healthy Community 80

 5.9 Steps to Planning for a Healthy Community 81

 5.9.1 Step 1: Mapping Out a Vision for a Healthy Community 81

 5.9.2 Step 2: Analysing Underlying Obstacles and Barriers to Achieving a Healthy Community 81

 5.9.3 Step 3: Identifying Appropriate Strategic Directions for a Healthy Community 81

5.9.4	Step 4: Identifying Systematic Actions and Assessing Community Capacity	82
5.9.5	Step 5: Developing an Implementation Schedule and Carrying Out Proposed Actions	82
5.10	Site Visits	83
5.11	Secondary Data Sources	83
5.12	Data Management and Analysis	83
5.13	Conclusion	84
	References	85

Part III Case Studies: Application of the Ecohealth Approach

6	Applying an Ecosystem Approach to Community Health Research in Ghana: A Case Study	89
6.1	Introduction	89
6.2	Health and Environment Challenges of the Study Community	91
6.3	Making Use of an Ecosystem Approach to Community Health Research	93
6.4	Forming a Transdisciplinary Research Team and Setting the Research Agenda	94
6.5	Findings of the Study	95
6.5.1	Community Members' Perceptions of Health and Poor Health	95
6.5.2	Indicators of Good Health and Poor Health	97
6.5.3	Identifying Major Community Health Problems	98
6.5.4	Examining the Underlying Causes of Poor Health in the Community	100
6.6	Analysing Participants Responses from a Political Ecology of Health Perspective	102
6.7	Conclusion	106
	References	106
7	Planning for a Healthy Community: A Case Study – Phase II	109
7.1	Introduction	109
7.2	Mapping Out A Vision for a Healthy Community	111
7.3	Identifying Obstacles to Achieving a Healthy Community	114
7.4	Assessing Our Strengths and Resources	117
7.5	Identifying Strategic Directions and Systematic Actions for a Healthy Community	118
7.5.1	Building Community Capacity to Manage Local Environments Sustainably	119
7.5.2	Strengthening Intersectoral Collaboration	120

- 7.5.3 Broadening the Concept of Community Participation 121
- 7.5.4 Communicating Environment and Health Information Effectively 121
- 7.5.5 Building on Local Knowledge Systems 122
- 7.6 Building Community Capital: Integrating the Strategic Directions 124
- 7.7 Drawing up an Implementation Plan 125
- 7.8 Conclusion 127
- References 127

8 Challenges and Ethical Dilemmas in Conducting

- Participatory Ecohealth Research** 129
- 8.1 Introduction 129
- 8.2 Gaining a Second Entry into the Community 130
- 8.3 Establishing Equal Partnerships Between Participants and the Research Team 133
- 8.4 Participatory Ecohealth Research as Transformative and Empowering? 134
- 8.5 To Be or Not To Be: Insider – Outsider Relations 136
- 8.6 Dealing with Vulnerability in Focus Group Discussions 137
- 8.7 Are all Voices and Knowledges Captured through Group Processes? 138
- 8.8 Conclusion 139
- References 140

9 Ecosystem Approaches to Indigenous Health

- 9.1 Introduction 141
- 9.2 Indigenous Peoples and Communities 143
- 9.3 Indigenous Conceptions of Health and Links to “Country” 144
- 9.4 Colonized and Politicized Indigenous Ecosystems: Implications for Human Health 146
 - 9.4.1 Mercury Poisoning in Grassy Narrows First Nations 146
- 9.5 Climate Change and Indigenous Health 148
- 9.6 Examining Indigenous Health Problems from a Political Ecology of Health Perspective 150
- 9.7 Ecosystem Approaches to Indigenous Health 152
- 9.8 Conducting Research with Indigenous Communities: Some Considerations 153
- 9.9 Conclusion 156
- References 156

10 Policy Frameworks on Health and Environment Linkages 159

10.1 Introduction 159

10.2 Global Policy Frameworks on Health, Environment
and Development 160

10.3 Regional Initiatives on Health and Environment: Africa
and Europe 163

10.3.1 Health and Environment Policy Frameworks
in Africa 164

10.3.2 Health and Environment Policy Frameworks
in Europe 167

10.4 Developing Integrated Policy Frameworks:
Issues and Challenges 169

10.5 Influencing Policy Through Community-Based
Ecohealth Research 172

10.6 Conclusion 173

References 173

Part IV A Critical Approach to Ecohealth Research and Practice

11 Applying Critical Theory to Environment and Health Issues 177

11.1 Introduction 177

11.2 Critical Theoretical Perspectives 178

11.3 The Production of Scientific Knowledge Claims 179

11.3.1 Processes Through which Scientific
Knowledge Claim Authority 180

11.4 Constructing Subject Positions Through the Use
of Binary Logic 181

11.5 Scientific Interventions and Forms of Resistance 183

11.6 Conclusion 183

References 184

12 Examining Environmental Problems from a Critical Perspective . . 185

12.1 Introduction 185

12.2 Examining Various Environmental Discourses 187

12.3 Key Features of Political Ecology 189

12.4 Political Ecology of Health 193

12.5 Conclusion 194

References 195

13 Examining Public Health Concerns from a Critical Perspective . . 199

13.1 Introduction 199

13.2 Public Health as Discourse 200

13.3 Negotiating Definitions of Health and Ill Health 201

13.4 Negotiating the Determinants of Health Problems 202

13.5 Historicizing Health Problems 203

13.6	Conclusion	204
	References	205
14	Towards a Critical Approach to Ecohealth Research and Practice	207
14.1	Introduction	207
14.2	Identifying Environmental Problems from a Critical Perspective	208
14.3	Explaining Environmental Problems from a Critical Perspective	210
14.4	Identifying Health Problems from a Critical Perspective	211
14.5	Explaining Health Problems from a Critical Perspective	213
14.6	Contextualizing Environment and Health Experiences	214
14.7	Developing Mutually Acceptable Ecohealth Interventions	216
14.8	Approaching Transdisciplinarity and Participation from a Critical Perspective	218
14.9	Towards a Reflexive Ecohealth Research Practitioner	219
14.10	Conclusion	220
	References	221
Index	223