Matters of Judgement:

Concepts of evidence among teachers of medicine and public health

Lucie Rychetnik

September 2001

This thesis is submitted in full satisfaction of the requirements for the Degree of Doctor of Philosophy (PhD) University of Sydney
ACKNOWLEDGEMENTS

Primarily I would like to thank the supervisors of this research for their enthusiasm about the project and ongoing encouragement and constructive feedback.

The principal supervisor was Professor Stephen Leeder, Dean of the Faculty of Medicine, University of Sydney. Associate supervisors were Dr Penelope Hawe, Senior Lecturer in the Department of Public Health and Community Medicine, and Associate Professor Gwynnyth Llewellyn, Head of School at the School of Occupation and Leisure Sciences.

I would also like to thank Professor Les Irwig, Chair in Epidemiology, Department of Public Health and Community Medicine for encouraging critical thinking about the topic of evidence.

Finally, this research could not have been undertaken without those academics and practitioners at the Faculty of Medicine, University of Sydney, who generously consented to be interviewed, in-depth, on the topic of evidence. Thank you to those inspired minds.

This research was supported by a PhD Scholarship from the National Health and Medical Research Council (NHMRC) from March 1996 to September 1999.
AUTHOR’S CONTRIBUTION

I, Lucie Rychetnik, was primarily and principally responsible for the following: development of the research proposal and research questions; submission for a NHMRC scholarship for the study; selection of research methods; data collection; data management; data analysis; and interpretation and presentation of the findings.

I acknowledge the assistance of my supervisors, who provided constructive feedback and critique throughout all stages of the project and reviewed multiple drafts of this thesis.

DEDICATION

To my brother, Jan.
## CONTENTS

ABSTRACT .................................................................................................................................................. 9

Chapter One  INTRODUCTION

1.1 RATIONALE AND ORIGINS OF THE RESEARCH .......................................................... 12
1.2 STUDY OBJECTIVES AND RESEARCH QUESTIONS ....................................................... 14
1.3 THESIS STRUCTURE ........................................................................................................... 15
1.4 THESIS REPORTING STYLE .................................................................................................. 16
   1.4.1 Contemporary perspectives .......................................................................................... 16
   1.4.2 Position adopted ........................................................................................................... 17

Chapter Two  SETTING THE SCENE

2.1 RATIONALE FOR LITERATURE REVIEW ........................................................................ 19
2.2 PHILOSOPHIES OF SCIENCE ............................................................................................. 21
   2.2.1 The modern worldview .............................................................................................. 21
   2.2.2 Empiricism and the problem of induction ................................................................. 22
   2.2.3 Falsification and Confirmation .................................................................................... 26
2.3 SCIENCE AS A SOCIAL ACTIVITY ....................................................................................... 28
   2.3.1 Thought styles ............................................................................................................. 28
   2.3.2 Paradigms .................................................................................................................... 29
   2.3.3 Social construction of science ..................................................................................... 32
2.4 KNOWLEDGE OF THE SOCIAL WORLD ........................................................................... 33
   2.4.1 Naturalists and anti-naturalists .................................................................................... 33
   2.4.2 Post-modern influences ............................................................................................... 34
   2.4.3 Pragmatism .................................................................................................................. 36
   2.4.4 Eclectic social inquiry ................................................................................................. 36
2.5 THE NORMAL SCIENCE OF MEDICINE AND PUBLIC HEALTH .................................... 38
   2.5.1 Dominant conventions and alternative paradigms ....................................................... 38
   2.5.2 A focus on diagnosis and explanation ........................................................................... 39
2.6 EVALUATING HEALTH CARE ............................................................................................ 41
   2.6.1 Numerical methods and clinical epidemiology ............................................................. 41
   2.6.2 The rise of randomised controlled trials ..................................................................... 42
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.3 Interview process</td>
<td>92</td>
</tr>
<tr>
<td>4.3 OTHER DATA SOURCES</td>
<td>98</td>
</tr>
<tr>
<td>4.3.1 Participant observation</td>
<td>98</td>
</tr>
<tr>
<td>4.3.2 Evidence-based health discussion list</td>
<td>101</td>
</tr>
<tr>
<td>4.3.3 Medical and public health literature</td>
<td>103</td>
</tr>
<tr>
<td>4.4 DATA ANALYSIS</td>
<td>104</td>
</tr>
<tr>
<td>4.4.1 Introduction</td>
<td>104</td>
</tr>
<tr>
<td>4.4.2 Summary of analytic strategies</td>
<td>105</td>
</tr>
<tr>
<td>4.4.3 Descriptive themes</td>
<td>108</td>
</tr>
<tr>
<td>4.4.4 Interview summaries</td>
<td>109</td>
</tr>
<tr>
<td>4.4.5 Generating analytical codes and categories</td>
<td>112</td>
</tr>
<tr>
<td>4.4.6 Developing category dimensions and exploring generalisability</td>
<td>122</td>
</tr>
<tr>
<td>4.4.7 Exploring theoretical links and the “story so far”</td>
<td>124</td>
</tr>
</tbody>
</table>

Chapter Five

RESULTS AND REFLECTIONS

5.1 INTRODUCTION | 130 |
5.1.2 Matters of judgement: a structure for chapter 5 | 133 |
5.1.3 A note on the use of terms | 136 |

5.2 DYNAMIC AND EVOLVING EVIDENCE | 139 |
5.2.1 Introduction | 139 |
5.2.2 Summary of my grounded theory on evidence | 139 |
5.2.3 Evidence as uncharted territory | 140 |
5.2.4 Shifting sands: developments in the evidence-based movement | 143 |
5.2.5 Reflections | 149 |

5.3 THE QUEST FOR “ALWAYS LATENT” TRUTH | 155 |
5.3.1 Introduction | 155 |
5.3.2 Summary of my grounded theory on evidence | 155 |
5.3.3 Realism, substantiation and importance of criteria and standards | 156 |
5.3.4 The science and art of critique | 160 |
5.3.5 Uncertainty and pragmatic compromise | 162 |
5.3.6 Managing uncertainty | 166 |
5.3.7 Uncertainty and EBM | 169 |
5.3.8 Reflections | 172 |

5.4 DEFINING EVIDENCE: DESCRIPTION AND APPRAISAL | 180 |
5.4.1 Introduction | 180 |
5.4.2 Summary of my grounded theory on evidence | 180 |
5.4.3 Three points of entry to describing evidence | 182 |
5.4.4 Describing evidence as an observation or measure of reality | 183 |
5.4.5 Describing evidence by its role and function | 185 |
LIST OF FIGURES

Figure 1: “Triangulation of data sources: theoretical sensitivity and theory building.” (p. 83)

Figure 2: “Data analysis flow chart” (p. 107)

Figure 3: “Data management using NUDIST package” (p. 114)

Figure 4: “Organising categories in March 1999” (p. 121)

Figure 5: “Judgement: combined knowledge, action and values” (p. 127)

Figure 6: “The concept of evidence as a bridge between the principles of substantiation and fundamental uncertainty” (p. 178)

Figure 7: Conceptualising evidence (p. 192)

Figure 8: The relationship between evidence and conclusions (p. 214)
ABSTRACT

Introduction
The aim of this study was to examine how the term “evidence” was conceived and used among academics and practitioners who teach medicine and public health. The rationale for the study was the widespread debate in the 1990s about evidence in health care.

Methods
Qualitative data were collected between 1996 to 1999. The core data came from unstructured interviews with researchers and practitioners linked to the Faculty of Medicine, University of Sydney. Other sources of data were: participant observation of group interactions in the Faculty of Medicine and at national and international conferences about evidence in health care; discourse in health care literature; and Internet posting to an international “evidence-based health” Email discussion list.

The Grounded Theory method was adopted to analyse and interpret these data. The process involved systematic coding of the data to develop conceptual categories. These categories were employed to formulate propositions about the topic of evidence and how it was conceived and used by the study participants.
Results

Researchers and practitioners often discussed evidence from a “realist” view: that is they valued scientifically derived and rigorously substantiated knowledge about the natural world. Yet despite their widely shared epistemological perspectives, study participants presented several diverse concepts of evidence. Their ideas were also dynamic and evolving, and often influenced by the developing (local and international) debates and controversies about evidence-based medicine (EBM).

Grounded Theory analysis leads to the selection of a core “social process”. This is a core conceptual category that draws together the ideas observed in the data, and that is adopted to present the study findings. In this study, “judgement” was identified as the core social process to underpin all examined reflections and discussions about evidence.

Study participants defined the concept of evidence through a combination of description and appraisal. Evidence was described in three ways, i.e.: as a “measure of reality”, by its “functional role”, or as a “constructed product”. Evidence was also appraised on three “dimensions”, i.e.: “benchmarked”, “applied” and “social” dimensions of evidence. Participants invoked these concepts of evidence differently when forming their own judgements about medical or public health knowledge; when making decisions about clinical
practice; and when using argument and persuasion to influence the judgements of others.

Many researchers and practitioners also modified their judgements on evidence in the light of EBM. This was based on perceptions that EBM had become a dominant rhetoric within health care, which had the potential to channel the flow of resources. This led to an increasing consideration of the “social dimension” of evidence, and of the social construction and possible “misuse” of the term evidence.

Conclusions

The concept of evidence is presented in this study as a multi-dimensional construct. I have proposed that the three descriptions and three dimensions of evidence presented in this study, and recognition of the way these may be invoked when forming and influencing judgments, can be used as a basis for communicating about evidence in medicine and public health among colleagues and with students.

There are significant gaps in knowledge (based on empirical research) about the social dimension of evidence. Particularly, in situations where researchers and practitioners wish to employ the concept of evidence to influence others’ medical and public health practice and wider social policy.