

Synthesizing Qualitative Evidence

Alan Pearson

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This series of concise texts is designed to provide a “toolkit” on synthesising evidence for healthcare decision-making and for translating evidence into action in both policy and practice. The series seeks to expand understanding of the basis of evidence-based healthcare and brings together an international group of scholars to describe, discuss and debate critical issues in the field.

Incredible developments in the synthesis and use of evidence in healthcare over the last several years have occurred, but the accompanying science and emerging practices that underpin evidence based healthcare are often poorly understood by policy makers and health professionals. This is unfortunate because several emerging and exciting developments have much to offer this group. Firstly, new, deeper understandings of the nature of evidence and of ways to appraise and synthesise it have led to the development of more sophisticated methodologies for synthesis science. Secondly, the realisation that the rapid increase in the availability of high quality evidence has not been matched by increases in the translation of this evidence into policy and/or clinical action has spurred on developments in the science of knowledge implementation and practice improvement.

The burgeoning publications in this area – particularly books on evidence based healthcare - can go only so far in informing responsible and conscientious policy makers and healthcare practitioners. This new series, Lippincott/Joanna Briggs Institute, “Synthesis Science in Healthcare”, is devoted to communicating these exciting new interventions to both researchers and clinicians who are on the front line of practice or influencing policy.

The books in this series contain step-by-step detailed discussions and practical processes for assessing, pooling, disseminating and using the best available international evidence. In all healthcare systems, there is growing consensus that evidence-based practice offers the most responsible course of action for improving health outcomes. All clinicians and health scientists want to provide the best possible care for patients, families and communities. In this series, our aim is to close the evidence to action gap and make that possible.

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Introduction

In the fields of health and social care, the synthesis of the best available evidence to support decision making at the policy and practice level is increasing in importance. Practitioners and patients are called upon to make numerous health care decisions and, in doing so, need to weigh various types of information before taking action. This information comes from a myriad of sources, including the results of well-designed research; information related to the preferences of patients/clients and their relevant others; the practitioner's own experiences; and the nature and norms of the setting and culture in which the care is being delivered.

Serious consideration has been given to the meaning of evidence in relation to evidence-based health and social care and there is a growing body of literature on the value of evidence that can be elicited from qualitative research (for example, Dixon-Woods et al 2004, 2007; Lockwood 2011; Porritt 2011; Sandalowski 2010; Noyes et al 2008, 2010; Noblit and Hare 1988; Popay 1998). The word 'evidence' has become one of the most commonly used terms within the healthcare arena, as it is associated with nearly every aspect of healthcare including references to 'evidence-based' practice, clinical guidelines, decision-making, policy making and evidence-informed patient choice (Rycroft-Malone et al 2004). In its most generic sense evidence is defined as a 'ground belief'; that which tends to prove or disprove something". In health care it can be described as "... data or information used to decide whether or not a claim or view should be trusted" (Pearson 2005). The traditional, quantitative, scientific approach (aligned to a positivist paradigm) to evidence generation has dominated the Western world's view of "trustworthy" evidence. The positivist paradigm takes an epistemological stance that the goal of inquiry is to control and predict and that knowledge is proven only by empirical use of the scientific method to uncover laws. This narrow perspective of science, knowledge and evidence has been challenged for some time and a broader, more balanced conceptualization of what constitutes systematic knowledge is rapidly emerging. There is now growing acceptance of knowledge elicited through alternative approaches such as those that examine the personal, social, political and cultural components of health, illness and health care.

Methods to synthesize qualitative evidence are now emerging and this text examines the methodological bases to qualitative synthesis and describes the processes involved in the conduct of a rigorous synthesis of qualitative evidence, with a particular focus on Meta-Aggregation.

The Synthesis of Qualitative Evidence

Chapter 1:

The nature of qualitative evidence

Qualitative evidence comprises data or information that is expressed in terms of the meaning of acts or events; the quality or form of a phenomenon rather than a quantitative measurement of it. Qualitative paradigms broaden the meaning of knowledge to that which transcends knowledge accessible only through quantitative measurement. Qualitative research involves the design and conduct of studies focused on exploring and understanding a central phenomena (Creswell, 2002). Qualitative researchers desire to seek answers to questions that emphasize how social experience is created and given meaning in the context of the human experience (Denzin and Lincoln, 2000). Qualitative data is generally collected through interviews, focus groups, textual analysis, direct observations of activities or behavior and surveys.

The delivery of effective healthcare is informed from a variety of both qualitative and quantitative research methods. For example, epidemiological research informs the field in terms of disease prevention, health gain and service planning. Randomized controlled trials, clinical trials and cohort studies provide essential knowledge for the delivery of effective interventions. Diagnostics and economic research is an important component in planning and managing national and local services and phenomenological, ethnographic and historiography can help us understand how the care is being contextualized and/or experienced. Evidence gained from qualitative research is invaluable in understanding how individuals and communities perceive health, manage their own health and make decisions related to health service usage. The knowledge gleaned from qualitative data can play a major role in increasing our understanding of the culture of communities and health units in relation to implementing change and overcoming barriers to the use of new knowledge and techniques. This information informs planners and providers in relation to how service users experience health and illness and the health system and additionally can be used to evaluate components and activities of health services that cannot be measured in quantitative outcomes (such as health promotion and community development).

The 1970-1990s saw considerable debate about the different paradigms or traditions of research in the English-speaking world. On one side of the debate were those who supported objective, quantitative approaches to research and discovery of knowledge. Scientists that embraced this positivist paradigm sought to establish cause and effect relationships in an

objective “scientific” manner. It was generally believed by many of these scientists that research should be devoid of any subjectivity. Others such as Phillips (1987) and Kerlinger, (1979) challenged this and believed that due to the human involvement in all research endeavors objectivity was impossible to achieve. Kerlinger 1979 stated that the “the procedures of science are objective and not the scientist” (p. 264). Counter to this view were those who argued for humanistic, qualitative approaches to research such as a naturalistic or phenomenological, hermeneutic paradigm (von Wright 1993) where context and meaning were crucial factors to be described and acknowledged. This paradigm fell into the category of “human science”. Giorgi (1970) argued for the value of human sciences and attributed the notion of *Geisteswissenschaften* or the human sciences as far back as Wilhelm Dilthey (1833-1911). Contrary to the positivist notion about subjectivity, human scientists value the subjective reality of humans because they are situated in reality and meaning is constructed in it. It was believed by Giorgi (1985) and others that human sciences needed a scientific language and methods that were different to those of the positivist paradigm. While accepting the subjective nature of qualitative inquiry there was a recognition for the need for rigor and respect for theoretical and methodological consistency. In 1985, while continuing to advance the methodological stance of human science, Giorgi articulated three requirements for scientific knowledge: a) that the knowledge is researched utilizing a methodology of clearly defined procedures that open access to the phenomena; b) the knowledge is systematic, that is the interrelationships in the phenomena are sought out and c) the process is open to self-criticism and later open to the scientific community for critique. To a lesser degree the debate still continues today but in the late 1990s, and since, there has been much greater acknowledgement of the value of both types of research approaches and indeed an acceptance that they can be complementary rather than in opposition to each other. This change may also reflect the increase in qualitative research and the subsequent increase in the number of qualitative papers appearing in health journals since 1996. As all research is driven by a central question, the type of question determines the methods best used to answer the question. For example, if one seeks to know how many people smoke cigarettes within a particular population then qualitative methods are of no value. However, if one wants to know what it is like for long term smokers when they try to stop smoking, then quantitative methods will be of limited value. Both types of data complement each other and are ultimately useful to policy makers and practitioners.

Qualitative research approaches were, at one time, dismissed by ‘clinical scientists’ as “subjective, or soft”. They were the province of the anthropologist or social scientist, not the province of the health service clinician, epidemiologist or researcher who required ‘scientific, hard’ data to convince colleagues and policy makers of the importance of research findings.

More recently, data derived from qualitative research can also be viewed as “rich and deep” (Bryman 1988) which suggests that the role of data is significantly different from the “objective and hard” terms applied to quantitative data. Credibly acquired qualitative data may help to bring understanding to areas of practice that quantitative studies cannot. It serves to illuminate the perspectives of patients and practitioners; explicates social processes; and questions dominant positions or typologies. By their very nature these areas are not amenable to being researched using experimental methods but are valuable in contributing to an enhanced and holistic picture of health care.

Qualitative research is not concerned with numerical data (Strauss and Corbin 1990). Cresswell (1998) describes the concerns of qualitative research thus:

Qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting. (p15)

Qualitative research seeks to capture data that can answer research questions that are framed in terms of how or what, rather than the why of cause-and-effect. Qualitative research attempts to understand, through interpretive methods, how health or social care interventions work, (feasibility) or what is the experience of being exposed to an intervention (meaningfulness), rather than why they work (efficacy) or which works best (effectiveness). Green and Thorogood (2004) characterize this as seeking answers to the what, how and why of phenomenon rather than questions that ask how much or how many. The phenomenon of interest will of course depend on the researcher and their search for answers to questions that, on the whole, require oral or written textual data, rather than numerical data.

To the beginner, qualitative research can often appear confusing as a variety of different perspectives and terms are used. The perspectives and terms usually represent a range of different ontological (**the nature of being and living**), epistemological (**the nature and scope of knowing and knowledge claims**) and theoretical positions within the qualitative research tradition. Generally, qualitative research is often referred to as naturalistic (Lincoln and Guba, 1985); that is - phenomena are studied in (or related to) their natural setting. This paradigm is based on the assumption that reality is socially constructed, complex and explores behaviors through human perception, understanding, and the beliefs that motivate them (Tavakoi & Zeinaloo, 2004). Naturalistic inquiry embraces the premise that people cannot be separated from the physical, cultural and social elements of their environment and are also influenced, and in turn influence, their environment.

This emphasizes that qualitative research is seeking knowledge of the experiences and meanings to which individuals ascribe actions and events within particular contexts. Context is the circumstance in which an event occurs. Each person sees things within their own context and is one of the things a qualitative researcher attempts to understand.

Validity, reliability and generalizability in qualitative research

Traditionally the terms used to measure the quality/rigor of research are reliability, validity and generalizability. Generally, reliability is the extent to which the results of a study or a measure are repeatable in different circumstances whereas validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. Whilst the ideal of quantitative research relates to generalizability and replicability (normothetic), qualitative research sets out to illuminate the experiences, behaviors and actions of individuals that, it is argued, are unique for each person (ideographic) so therefore cannot be generalized in the way the term is used in quantitative paradigms.

As the terms reliability, validity and generalizability are essential measures of quality in quantitative work, Lincoln and Guba, (1985) speak of the terms credibility, dependability and transferability as being more suitable for judging the quality of qualitative work. In general, credibility

Table 1. Validity and reliability in quantitative and qualitative research

Quantitative Research	Qualitative Research
reliability	dependability
internal validity	credibility
external validity	transferability

is how truthful the findings are as judged by others such as participants and others in the discipline. Connected to this is “fit” which is faithfulness to the words of the participants described in enough detail to be judged by others as helpful to their practice. Dependability is the obvious presence of a clear decision trail achieved by recording data management techniques, coding decisions and decision rules. Transferability is the extent to which the results of a qualitative study can be transferred to other contexts or settings. Transferability of qualitative data remains the subject of on-going debate.

Their proposed criteria and the “analogous” quantitative criteria are listed in Table 1. It is worth noting however, that the translation and development of criteria to assess the quality of qualitative research is a contested issue (Atkins, Lewin et al. 2008) .

The appropriateness, and means of, judging the quality of qualitative research remains deeply contested, in part reflecting some of the tensions in the field of qualitative research itself (Dixon-Woods, Sutton et al. 2005). Some qualitative synthesists – particularly those who utilise Meta-Ethnography, argue that the criteria for inclusion of individual studies should be based on conceptual considerations rather than on methodological considerations (Noblit & Hare, 1988; Sandelowski et al., 1997) whilst others – particularly those who are aligned to Meta-Aggregation – argue that “. . . a transparent approach to appraising qualitative research is central to its ongoing credibility, transferability and theoretical potential” (Averis and Pearson 2003, 51).

In qualitative research, the concept of reliability typically refers to adopting research methods that are accepted by the research community as legitimate ways of collecting and analyzing data (Collingridge and Gantt 2008). According to Lincoln & Guba (1985) and (Seale 1999) the term *dependability* in qualitative research closely corresponds to the notion of reliability in quantitative research. The qualitative studies that adopt reliable qualitative methodology, methods and conduct their analyses in a competent manner (see validity) are expected to generate results that enrich our understanding of the meanings that people attach to social phenomena (Collingridge and Gantt 2008). In qualitative research, the aim of reliability differs from the quantitative understanding in that the focus is not on obtaining exactly the same results time and again, but rather on achieving consistent similarity in the quality of the results. To maintain reliability/dependability, the qualitative research process should be logical, traceable and clearly documented.

Internal validity/credibility

In general, validity concerns the degree to which an account is accurate. In qualitative research, validity concerns the degree to which a finding is judged to have been interpreted in a correct

way. In quantitative research 3 subcategories of validity are commonly referred to (Collingridge and Gantt 2008);

- Construct validity: reflects a concern with whether we are truly assessing an underlying construct such as emotional well-being, physical comfort, or pain;
- Content validity: reflects a concern with whether our measurement tools (e.g. interviews, observation etc.) provide an adequate measure of the construct of interest; and
- Criterion validity: refers to the strength of the relationship between our measurement tools and other measures of the same phenomenon.

Although internal validity is treated separately in quantitative studies, these terms are not viewed separately in qualitative research. The *credibility* of qualitative research depends on the ability and effort of the researcher to address the issue of 'fit' between respondents' views and the researcher's representation of them. Credibility is demonstrated through a number of strategies: member checks (returning to the participants following data analysis), peer debriefing/peer checking (using a panel of experts or an experienced colleague to re-analyze some of the data), prolonged engagement, persistent observation and audit trails (Rolfe 2006).

External validity/transferability

External validity/transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings. The question as to whether qualitative results are generalizable in the same way that quantitative results are generalizable is a matter of ongoing debate. Collingridge & Gantt (2008) argue that studies that build on existing theoretical concepts through comprehensive literature reviews, employ theory-based sampling procedures, follow well-defined data analysis procedures, clearly define how the findings apply to other contexts, and integrate results into existing research in a coherent fashion produce results that can be generalized with a greater degree of confidence. Consensus appears to be emerging that for qualitative researchers generalizability is best thought of as a matter of the "fit" between the situation studied and others to which one might be interested in applying the concepts and conclusions of that study; this is sometimes referred to as cross-case generalizations.

Role of the Qualitative Researcher

The idiographic nature of qualitative research means that researchers themselves are a key part of the research and not, as is claimed in quantitative research, detached, distant and an outsider (Bryman 1988). The researcher in qualitative research is expected to be closer to subjects and more inside the process of the research from question development to data analysis and reporting. Such engagement brings with it both advantages and disadvantages, particularly when the researcher is expected to create some order from the work and apply theoretical analysis to the findings. The implication is that it is important to be able to see where the researcher is coming from (philosophically) and the manner in which they have gathered and interpreted data.

This type of engagement with the research process and the data highlights the fact that qualitative research is part of an interpretative or critical paradigm (a paradigm being the

values, models and beliefs that guide the development of knowledge, see Kuhn 1970) - one that might also be considered relativist in orientation; that is, all outcomes are relative to the people and context that is being researched. Relativism could create a situation where there is no accord with the wider community and hence qualitative studies may only be viewed as isolated examples, rather than as contributions to knowledge and understanding. However, Silverman (2006 p365) argues cogently that the relative nature of qualitative data can be overcome through contributing in three key areas of activity:

- Participating in debates about how organizations function;
- Providing new opportunities for people to make their own choices; and
- Offering a potentially new perspective to practitioners and clients.

These three areas, from a general perspective, could encompass a breadth and depth of qualitative research activity that could make significant contributions to practice and policy in health care.

There are many sources of materials that address the qualitative-quantitative debate, one source can be found at <http://www.qualitative-research.net/fqs-texte/1-01/1-01hrsg-e.htm>

The Role of Qualitative Evidence in Health Care

Everything we do in healthcare is immersed in the human experience. Qualitative evidence or qualitative data allows researchers to analyse this experience as well as the cultural and social impact of the experience. Qualitative evidence has its origins in research methods from the humanities and social sciences and seeks to analyse the complexity of human phenomena in naturalistic settings and from a holistic perspective. The term 'qualitative' refers to various research methodologies including ethnography, phenomenology, action research, critical theory, discourse analysis and grounded theory. Research methods include interview, observation and interpretation of written material. Researchers who use qualitative methodologies seek a deeper truth, aiming to study things in their natural setting, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them.

Qualitative evidence is inductive and therefore especially useful and applicable in areas where there is little pre-existing knowledge, where it is difficult or inappropriate to generate a hypothesis and where issues are complex and require more detailed exploration. Like quantitative research there are strict criteria that guide the user as to the 'validity' of the evidence being generated from qualitative research. The strength of qualitative research lies in its credibility (i.e. close proximity to the truth), using selected data collection strategies that try to get to = the core of what is going on rather than just skimming the surface.

Acknowledgement of the contribution that qualitative research findings make in improving the quality and relevance of healthcare conditions is increasing. As an example, the Guidance for Undertaking Reviews in Health Care published by the Centre for Reviews and Dissemination at the University of York (CRD, 2009) states that 'There is growing recognition of the contribution that qualitative research can make to reviews of effectiveness' as it helps to develop an understanding of the people, the practices and the policies behind the mechanisms and interventions.

Qualitative methods and data are increasing in usage in evidence-based healthcare research. Instead of quantifying or statistically portraying the data or findings, qualitative research

focuses on individuals and gives voice to the patient/client or provider in the healthcare decision-making process. Qualitative evidence comprises data that is expressed in terms of the meaning or experiences of acts or events rather than in terms of a quantitative measurement. Arguably one of the best features of its contribution to research inquiry lies in its stories and accounts of living and its richness of meanings within its words.

Philosophical perspectives, research methodologies and methods

A philosophical perspective encompasses our assumptions of the theory, the practice and the research methodologies that guide research. There are three major prevailing philosophical or guiding paradigms in current western health care research. The first is the positivist – or empirico-analytical – paradigm, often associated with quantitative evidence (see following chapter) while the other two, the interpretive and critical paradigms, are largely associated with qualitative evidence.

The Interpretive Paradigm

In the interpretive paradigm theory is inductive and concerned with exposing implicit meaning. It aims at understanding. The interpretive paradigm is grounded on assumptions and methods that are very different to those of quantitative research. There is an assumption that reality is constructed intersubjectively through the meanings and understandings that emerge from the research process. Its foundations are credited to the sociologist-philosopher Alfred Schutz who argued for a distinction between the natural sciences and the social sciences. Rather than using objective, quantifiable methods to gather information, the interpretive stance involves listening to people or watching what they do and generating understandings of those participating in order to interpret their meanings. True knowledge is dependent upon whether or not the participants accept these interpretations, rather than on whether they will identify cause, predict outcome, or allow control (Fay 1975). Neuman (2006:94) suggests that the interpretive paradigm assumes the following:

- The purpose is to understand social meaning in context;
- A constructionist view that reality is socially created;
- Humans are interacting social beings who create and reinforce shared meaning;
- A voluntaristic stance is taken regarding human agency;
- Scientific knowledge is different from but no better than other forms;
- Explanations are idiographic and advance via inductive reasoning;
- Explanations are verified using the postulate of adequacy with people being studied;
- Social scientific evidence is contingent, context specific, and often requires bracketing;
- A practical orientation is taken toward knowledge that is used from a transcendent perspective; and
- Social science should be relativistic regarding value positions.

The theorist builds up theory on the basis of the understandings that arise out of the people studied, rather than testing hypotheses. Theory is seen as: ‘... a skeletal, deprived view of reality that is drawn from everyday practical activity and knowledge’ (Allen, Benner and Dickelman 1986). Theory is not generalizable in the “traditional scientific” sense (although it

can generate broad understandings that are able to be transferred to other context or settings with qualification), and is used in order to understand. Essentially theory is seen to be already embedded in practice, although not made explicit.

Research and the subjective human world are seen to be inextricably linked and formal theory, i.e. that which is documented and accessible but derived from knowledge embedded in experience of the world, is used to guide the novice but is transformed and refined by the expert.

The Critical Paradigm

The critical paradigm, like the interpretive, is inductive; however it aims to emancipate knowledge and practice. It is based on an assumption that reality is shaped by cultural, sub-cultural, social, economic, and political forces. An important distinction of critical theory is the researcher is not just attempting to provide a rich description about a phenomena but is also attempting to change the situation. The critical paradigm goes beyond the boundaries of the positivist and interpretive paradigms. It seeks to generate theory from action or practice in order to help people address change in the interests of social justice. While interpretive science focuses on understanding the human condition, it still attempts to adopt a neutral position. Critical science, however, values engagement in the context studied. Neuman (2006:102) suggests that critical approaches assume the following:

- The purpose is to reveal what is hidden to liberate and empower people;
- Social reality has multiple layers;
- People have unrealized potential and are misled by reification; social life is relational;
- A bounded autonomy stance is taken toward human agency;
- Scientific knowledge is imperfect but can fight false consciousness;
- Abduction is used to create explanatory critiques;
- Explanations are verified through praxis;
- All evidence is theory dependent and some theories reveal deeper kinds of evidence;
- A reflexive-dialectic orientation is adopted toward knowledge that is used from a transformative perspective; and
- Social reality and the study of it necessarily contain a moral-political dimension, and moral-political positions are unequal in advancing human freedom and empowerment.

The critical paradigm therefore unambiguously integrates research and practice. The researcher-practitioner aims at raising consciousness, both their own and that of others, through collaboratively analyzing and seeking understandings of the 'real' situation, and searching out alternative ways of seeing the situation. This paradigm involves a dialectic¹ transaction between research and practice and therefore welds the two together. It focuses on theory in action or action in theory. This perspective, argues Allen (1985), offers us as health services researchers, the opportunity to translate frequently voiced rhetoric about the interrelationship between research and practice into the real world of practice.

¹ *Dialectic refers to a process whereby one explores ideas through confronting contradictions and searching for ways to resolve these contradictions or to explain them. This is an important concept in interpretive and critical research.*

Each paradigm is associated with a diversity of research methodologies and methods and it is important when undertaking a qualitative systematic review to ensure that there is congruity between the philosophical position adopted in a research study, the study methodology and the study methods. An outline of the key research methodologies and methods associated with the interpretive and critical paradigms is shown in Table 2.

Qualitative models hold out greater possibilities of capturing and generating understandings that effectively address policy makers and those involved in the provision of health services. Qualitative research can offer many things to research inquiry in general, but probably the best features of its contributions lie in its stories and accounts of living, and its richness of meanings within its words.

Qualitative research assists people to tell their stories about what it is like to be a certain person, living in a particular time, place, and set of circumstances. This means that even the most ordinary people can do research, or be part of research, because if they can speak and tell stories about subjects they know best: their own life experiences, they can be part of qualitative research. The researcher invites them to share a story and from these stories, rich and useful data can be gleaned.

The data generated from qualitative research are words. This is not to say that the only means of gathering qualitative data is through the spoken word. Data is gathered in a multiplicity of ways from direct observation of peoples' behavior and actions to drawings and music. However each of these media are converted into words for the analysis phase of qualitative research. These expressions about themselves and their relationships to other people become strings of words that have within them certain meanings, a basis for finding out new ideas about the area of research interest. This means, that if researchers want to know what the experience of being admitted to a nursing home is like, they will ask the people involved in the admission, in order to capture the richest meaning of that experience.

The general consensus among those that advocate qualitative approaches is that quantitative approaches are unable to attend to the intricacies and detail associated with the complexities of health services policy, planning and delivery. Quantitative approaches, they argue, apply generalized models and cross-sectional data analysis, they tend to homogenize experience and present, as one writer puts it, "... fixed static notions ..." (Abel, 1995 p87). By contrast, in qualitative approaches, experience and voice are represented from the perspective of those studied. Through these approaches the enduring contingencies of living are not denied their complexity and in this way context is not generally subsumed into a positivistic measure. Moreover, because qualitative approaches draw relationships between data and interpret this material, they are flexible in design and adaptive. They allow, that is, for contradictions to emerge that through a dialectical process, enrich our understanding of issues. This point is clearly illustrated in the following passage from Jaber Gubrium's article called "Qualitative research comes of age in gerontology":

Meaning is not necessarily made on the spot but develops in relation to the retrospective and prospective attention given to it. We learn from the apparent contradictions we hear when, say, retirees report one thing at one time and later say the opposite. Or from the story of experience told by an adult daughter in a field setting that is conveyed in a different version by her frail mother. (1992 p670)

Table 2. A summary of qualitative philosophy, methodologies and methods

Paradigm/Philosophy to structure knowledge and understanding	Methodologies	Data Collection Methods
<p>Interpretivism <i>Seeks to understand</i></p> <p><i>Sees knowledge in the possession of the people</i></p>	<p>Phenomenology Seeks to understand people's individual subjective experiences and interpretations of the world</p>	<p>Interviews</p>
	<p>Ethnography Seeks to understand the social meaning of activities, rituals and events in a culture</p>	<p>Focus groups Observations</p>
	<p>Grounded Theory Seeks to generate theory that is grounded in the real world. The data itself defines the boundaries and directs development of theory.</p>	<p>Field work (Observations, Interviews) Interviews Field observations (Purposeful interviews) Textual analysis</p>
<p>Critical enquiry <i>Seeks to change</i></p>	<p>Action research Involves researchers participating with the researched to effect change</p>	<p>Participative group work Reflective Journals (Quantitative methods can be used in addition to qualitative methods.)</p>
	<p>Feminist research Seeks to create social change to benefit women</p>	<p>Qualitative in-depth interviews Focus Groups (Quantitative methods can be used in addition to qualitative methods.)</p>
	<p>Critical Theory Concerned with issues of power and justice and often centered around issues of race, gender, class and economic equality.</p>	<p>Qualitative in-depth interviews Reflective dialogue</p>
	<p>Discourse Analysis assumes that language socially and historically constructs how we think about and experience ourselves, and our relationships with others</p>	<p>Study of communications, written text and policies</p>

Qualitative approaches in health science research represent a relatively new disciplinary approach and there is still much debate concerning the rigor of analysis (Gubrium, 1992; Koch, 1993; Koch, 1996), and also the benefits of one method over another; for instance the benefits an ethnographic approach over a phenomenological or grounded theory approach. As different approaches however, they set out to achieve different things and, in reality, when the divergent perspectives are put together, they provide a multifaceted view of the subject of inquiry that deepens our understanding of it. In this sense they are not substitutes for each other due to some essential superiority of one method over another, but rather they represent a theoretical ‘tool kit’ of devices. And, depending on the task at hand – the question being asked – one methodology on one occasion, may be a more useful tool than another.

Qualitative Methodology

Methodology is ‘the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes’ (Crotty, 1998:3). There are many different qualitative methodologies including (Crotty, 1998:5):

- Ethnography;
- Phenomenological research;
- Grounded theory;
- Action research;
- Discourse analysis;
- Critical Theory and
- Feminist research.

Ethnography

Ethnography is a ‘strategy of inquiry in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting, primarily, observational and interview data’ (Creswell, 2009:13).

Phenomenology

Phenomenological research is ‘a strategy of inquiry in which the researcher identifies the essence of human experiences about a phenomenon as described by participants’ (Creswell, 2009:13).

Grounded Theory

Grounded theory is ‘a strategy of inquiry in which the researcher derives a general, abstract theory of a process, action, or interaction grounded in the views of participants’ (Creswell, 2009:13).

Action Research

Basic action research is used to ‘target and solve an identified dilemma or problem’ (Chenail, St. George and Wulff, 2007:449). It enables ‘people (a) to investigate systematically their problems and issues, (b) to formulate powerful and sophisticated accounts of their situations,

and (c) to devise plans to deal with the problems at hand' (Stringer, 1999:17 quoted by Chenail, St. George and Wulff, 2007:449).

Participatory action research (PAR) is 'generally used to counteract oppressive conditions experienced by a particular segment of society' (Schwandt, 2001 quoted by Chenail, St. George and Wulff, 2007:449).

Discourse Analysis

Discourse analysis 'emphasizes the way versions of the world, of society, events and inner psychological worlds are produced in discourse' (Potter, 1997:146 quoted by Bryman, 2008:500-5001).

Critical Theory

Concerned with issues of power and justice and often centered around race, gender, class and economic equality.

Feminist Research

Feminist research in healthcare aims to explore underpinning issues that are known to cause discrepancies and inequities in women's.

Data collection methods

Methods are 'the techniques or procedures used to gather and analyze data related to some research question or hypothesis' (Crotty, 1998:3). There are many different methods of qualitative data collection (Crotty, 1998:5) and these include:

- Participant and non-participant Observation;
- Interview;
- Focus group interview;
- Participative group work;
- Reflective journaling;
- Narrative (Life history etc);
- Visual ethnographic methods;
- Qualitative textual Analysis.

Observation is 'the process of gathering open-ended, firsthand information by observing people and places at a research site' (Creswell, 2008:221).

A 'qualitative' interview refers to "... when researchers ask one or more participants general, open-ended questions and record their answers' (Creswell, 2008:225).

A focus group interview 'is the process of collecting data through interviews with a group of people, typically four to six' (Creswell, 2008:226).

Participative Group Work is used widely in action research and adheres to the principle of collaboration whereby the ideas of each person in the group are equally significant as potential resources for creating interpretations.

Reflective Journaling is the process whereby participants in a study keep a journal that records their experience of events or activities over a specified period of time. As Bolger

et al (2003) assert journals are a way of capturing the ‘particulars’ of an experience. The researcher then collects and analyses these records (Clayton and Thorne, 2000). In some ways journals can serve a similar purpose to interviews in that they are a way of finding out about people’s experiences, perceptions and feelings at the time, or soon after, the event occurs.

A **Narrative** is where researchers ‘describe the lives of individuals, collect and tell stories about people’s lives and write narratives of individual experiences’ (Connelly & Clandinin, 1990 cited by Creswell, 2008:512). For example, a **Life history** ‘is a narrative story of the entire life experience of a person’ (Creswell, 2008:514).

A **Visual ethnographic here** collates a series of visual images taken either by the researcher or by the research participants as a basis for discussion concerning the meaning and significance of the experience (Bryman, 2008:424).

A **Qualitative Textual Analysis** is ‘an approach to documents that emphasizes the role of the investigator in the construction of the meaning of and in texts’ (Bryman, 2008:276).

Conclusion

There is a tendency to classify research as quantitative or qualitative. Just as our description of three prevailing paradigms are classifications of approaches to research, so too is the quantitative/qualitative terminology.

We prefer to use the terms qualitative and quantitative in relation to *data and method*. While the positivist paradigm essentially focuses on quantification, this does not exclude quantifying qualitative data. For example, a survey of opinions on an issue (which would consist of qualitative data) can be analyzed by counting how many times particular opinions are expressed and then applying statistical tests. Similarly, quantitative data may be appropriate in critical research.

In discussing the quantitative/qualitative debate we are therefore confining our thoughts to quantitative/qualitative data and wish to avoid using these terms to describe overall, broad approaches to research. A hierarchy, where one method is seen as more robust in determining validity over another should only be applied in the context of the question being asked and not as a generalization between qualitative and quantitative research methods. Qualitative data is collected in order to derive understanding of phenomena from an emic (culture meaning) perspective. The focus is on description, understanding and empowerment. Where theory is developed it is based on inductive reasoning and is grounded in the reality as it is perceived and experienced by the participants involved. Conversely, quantitative data is collected in order to control phenomena. The focus is on theory testing and prediction and control. Theory derived from previous research is used to formulate a hypothesis or testable idea. Based on the process of deduction, the hypothesis is then tested using objective methods.

The relative merits of both of these forms of data are the subject of much heated debate in the health care system. On the one hand, qualitative methods are seen to most certainly increase understanding but they are often criticized as ‘biased’ and subjected to the question ‘... well, now that we understand, so what?’ On the other hand, quantitative methods are seen to give an apparently unbiased, objective picture of a situation or phenomenon, but they are often

argued as being 'only half the story' or being overly concerned with numbers and statistics. Both are needed to connect and ground our understanding of healthcare in its multiplicity of forms.

Central to the debate must be, however, the paradigmatic stance from which the researcher works, and the consumer of research reads. As long as the method is consistent with, or true to, the paradigm that underpins the research, and as long as it is an appropriate method to address the research question, in theory the debate becomes redundant. However, the debate still continues to rage largely because of deeply entrenched allegiances to a particular paradigm.

The effort to paint a 'true' picture of a phenomena has equal importance in both quantitative and qualitative research methods. However, given their different philosophical positions on objectivity and subjectivity the criteria used to direct the researcher's activities differ.

The principles of Internal validity in quantitative research are equally realized in qualitative methods under the principles of Credibility. Similarly the principles of External Validity are realized in the criteria for Transferability and Reliability as Dependability.

Chapter 2:

The role of interpretation in the synthesis of qualitative evidence

All qualitative research involves human interpretation (indeed, all research, including that involving quantitative data, involves a degree of interpretation but quantitative research approaches attempt to limit interpretation). Erickson (1986) asserts that the primary characteristic of qualitative research is the centrality of interpretation. Much of the interpretative activity involved in conducting qualitative research is often taken for granted - relatively unacknowledged - and largely unexamined. However, failing to be explicit about how qualitative data is interpreted raises ethical questions because a considerable amount of power resides within the right to interpret without explaining how it is done.

While phenomenology as methodology has been considered in Chapter 2, the phenomenological position is, in its broader sense, a philosophy that underpins interpretative approaches to the analysis of qualitative evidence. Phenomenological philosophy is grounded in the view that 'what people say and do (is) a product of how they define their world' (Taylor & Bogdan, 1984 pp.8-9).

How people define their world is related to:

- the interactions they have with others
- how they perceive others to perceive them
- the ways in which they have learned to deal with life experiences, good and bad and
- the amount of perceived control they have, and the significance of perceived control to them.

Reality is not a static given, nor is it some 'fact' or 'truth'. Rather it is a social construct (Berger & Luckmann, 1971) that is always in the process of being constructed and negotiated. What was considered a truth or reality at one time can be interpreted quite differently in another place, at another time, or in another context. Individuals and their environments are therefore in a constant and reflexive relationship.

From this perspective, human beings are not merely passive reflectors of social process; they actively construct social relations, not only by creating others through their evaluations of them but also by helping to create and project their own personae or self images. The social process is therefore seen as dialectical. Neither the self nor society should be seen as derivative of the other as in a cause and effect relationship. Rather both may be thought of as mutually constitutive.

Conceptualising the synthesis of qualitative evidence

The synthesis of qualitative evidence is the analysis or interpretation of secondary or processed data; that is, of the findings of the original authors of the qualitative studies being synthesised. Because the study findings are qualitative, the secondary analysis of these study findings by a reviewer or review team rather than the primary researchers is essentially an interpretive

process and thus an understanding of interpretation (and its challenges) is fundamental to selecting an appropriate methodological approach to synthesis. Interpretative approaches to synthesizing the findings of a number of qualitative research studies that focus on a particular phenomenon, experience or activity attempts to establish (often at both emotional and intellectually) connections between the meanings inherent in the reported findings of each study. The purpose of such a synthesis is to integrate *results* from a number of different but inter-related qualitative studies and not to re-analyse or re-interpret the original data. Indeed, the qualitative data found in qualitative research reports is illustrative rather than comprehensive. The synthesis or “pooling” of the findings of qualitative research studies is controversial. It is contested by quantitative researchers because of the “subjective” nature of qualitative evidence; and by qualitative researchers, because of the ideological, philosophical and methodological differences that characterise the flexibility of the qualitative research tradition. Some qualitative researchers argue that the synthesis of qualitative studies is impossible and meaningless. Others support the notion of qualitative synthesis, but there is no emerging consensus on appropriate guidance for the systematic review of qualitative evidence for health and social care. Although current methodological approaches to qualitative synthesis all employ processes of interpretation and aggregation, the two dominant approaches are often (somewhat contentiously) referred to as (a) aggregation; and (b) interpretation. These two dominant approaches have emerged as two opposing views on appropriate ways of synthesising qualitative evidence.

Aggregative synthesis

Aggregative (or integrative) synthesis, sometimes referred to as Meta-Aggregation, is essentially interpretive in nature but attempts to make the interpretative processes employed explicit. It involves assembling the findings of studies (variously reported as themes, metaphors, categories or concepts) and pooling the findings through further aggregation based on similarity in meaning. The aim is to summarize findings from studies where concepts are assumed to be largely secure and well specified. Aggregation produces theories of causality, in addition to claims about generalizability.

The Philosophical bases of Meta-Aggregation

Meta Aggregation (Pearson 2003) draws on the early work of Estabrooks et al (1994) and Sandalowski, Docherty & Emden (1997). It involves a systematic process of extracting and synthesising qualitative data based on a rigorous process equivalent to those used in the systematic review and meta-analysis of RCTs and other quantitative research whilst maintaining sensitivity to the contextual nature of qualitative research. Meta Aggregation emphasises the complexity of interpretive and critical understandings of phenomena; recognises the need to ensure that the approach to synthesis is transparent; seeks to identify cross-study generalisations or “essences of meaning; and focuses on generating synthesized statements that are practical and usable in health and social care policy and practice.

Hannes and Lockwood (2011) describe Meta Aggregation as a methodology that focuses on the “production of synthesized statements that refer to ‘lines of action’ informing decision making at the clinical or policy level”. They suggest that this approach is founded on the

principles and assumptions of the philosophic traditions of pragmatism and that this explains why the ‘lines of action’ presented as the result of a meta-aggregative synthesis are directive in nature and inform health care practitioners at the point of practical decision making.

Pearson (2003) situates Meta Aggregation as a structured, interpretive process (interpretivists address the essential features of shared meaning and understanding) that regards single studies as “cases” and, through extracting the findings as reported by the primary research studies, seeks to identify “cross-case generalisations” that are “. . . *naturalistic or idiographic generalizations, or the kind of generalizations made about particulars*” (Sandelowski et al 1997). This focus on searching for common meaning across qualitative studies draws from, according to Lockwood (2011), the Husserlian interpretivist position. Lockwood (2011) suggests that, although Husserlian philosophy is complex in its entirety, it focuses on engaging in inductive generalization to develop a knowledge of essences through the performance of phenomenological reduction by “bracketing” all previously held assumptions when considering the “evidence”. Phenomenological reduction calls for a suspension of beliefs, assumptions and bias about the phenomena under investigation. Husserl’s bracketing involves setting aside assumptions and focusing on the evidence. For example, the experience of contemplating the findings reported in a qualitative report is experienced by the person attempting to understand the meaning being expressed, irrespective of her or his pre-knowledge or understanding of the phenomena in question. By bracketing pre-understandings or assumptions, the synthesist considers only the processed or secondary data and the experience that he or she has of it. The concept can be better understood in terms of the interpretive activity it seeks to make possible: the “unpacking” of phenomena, or, in other words, systematically peeling away their symbolic meanings like layers of an onion until only the thing itself as meant and experienced remains. Thus, one’s subjective perception of the bracketed phenomenon is examined and analyzed in its purity. Some, like Merleau-Ponty (1956), doubt the complete reduction is possible because of the involved relationships individuals have with the world around them. Despite this, most researchers try their best by positioning themselves philosophically and stating their assumptions up front.

Meta Aggregation, as developed by a group led by Pearson (2004), is a method of synthesis designed to mirror the Cochrane Collaboration process of systematic reviews of effectiveness whilst being sensitive to the nature of qualitative research and its traditions. Implicit in its development is recognition of the valuable role qualitative research/evidence can play in bolstering evidence-based healthcare. Unfortunately aggregation has at times been associated with negative connotations where critics have assumed that the process is linear and mechanistic – a mere process of ‘adding’ together the findings of two or more studies on a particular question. However, meta-aggregation does involve interpretation, but is not constructivist and attempts to make the interpretive steps involved transparent.

Meta Aggregation is a structured and process driven approach to synthesizing qualitative research findings. All systematic reviews using meta-aggregation follow a similar structured process. Having explored the different dimensions of the chosen topic area, synthesists develop a rigorous proposal or protocol setting a predetermined plan that:

- Explicitly states the question;
- Sets out criteria that will be used to select literature;

- Details a search strategy to identify *all* relevant literature within an agreed timeframe;
- Critically appraise the studies that meet the inclusion criteria;
- Extract data from primary research regarding the participants, the phenomena of interest and the key findings; and
- Pool the findings of 2 or more studies.

These steps constitute set criteria for the review process: the need for a protocol; the requirement to undertake an exhaustive search to identify all relevant literature; and the use of critical appraisal.

A Meta Aggregative Review Example

McInerney and Brysiewicz (2009) conducted a systematic review on the experiences of caregivers in providing home-based care to persons with HIV/AIDS in Africa, using Meta Aggregation. The review considered studies in which family members were the primary informal caregivers of a person living with HIV/AIDS (adults and children) in Africa as well as studies in which informal caregivers (volunteers) from the community provided home-based care to persons living with HIV/AIDS in Africa. The phenomenon of interest was the experiences of caregivers' in delivering home-based care to people living with HIV/AIDS and the types of data included experiential accounts of caregivers. Each paper was assessed independently by two reviewers for methodological quality. The internal validity (quality) of research papers was assessed using the Joanna Briggs Institute's Qualitative Assessment and Review Instrument. A total of 32 papers were retrieved. Of these, 14 were included in the review with nine being qualitative research papers and the remaining five being opinion or text papers. Of the nine papers that were critically appraised using the JBI-QARI critical appraisal tool, three were excluded because of poor or incomplete descriptions of the methodology. The findings of the remaining six papers were extracted and used in the meta-aggregation.

A total of 29 findings were extracted from the included qualitative papers and these findings were aggregated into four categories on the basis of similarity of meaning. The categories were synthesized to generate one synthesized finding (Figure 1).

Interpretive synthesis

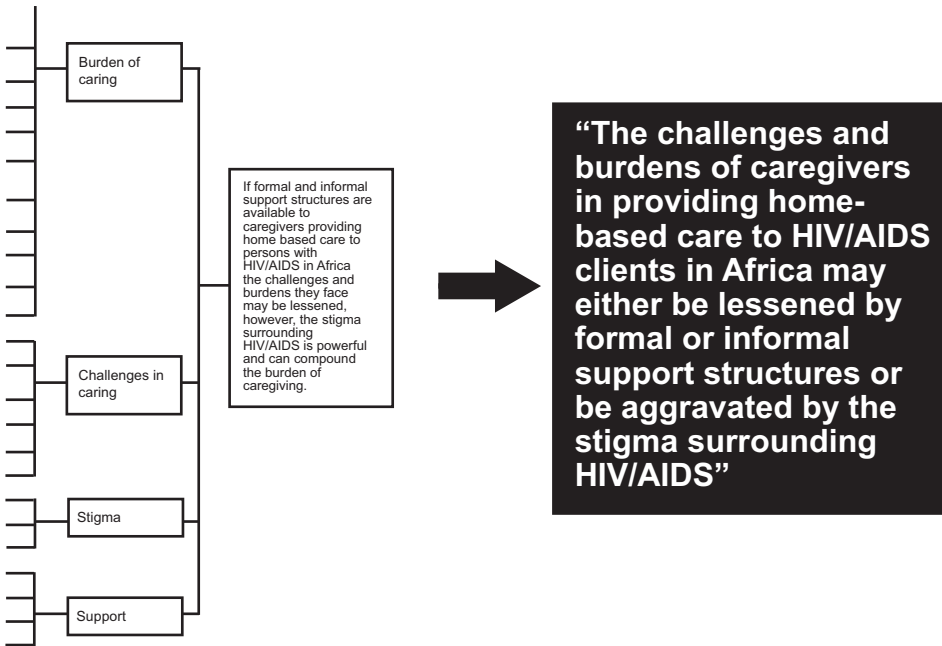
Interpretive synthesis (the most popular in the health field is Meta Ethnography) is also essentially interpretive in nature and attempts to aggregate the findings of studies as they are reported by primary researchers so it is also, in the literal sense, aggregative. However, it concentrates on induction and interpretation and is less concerned with prediction than Meta Aggregation.

It involves reading selected papers closely and in depth, determining how the studies are related, collating lists of concepts from included papers and juxtaposing them to identify the relationship between studies, translating the studies into each other and synthesizing the translations. The aim is to 'anticipate' what might be involved in analogous situations and to understand how things connect and interact.

The Philosophical bases of Meta Ethnography

Meta Ethnography was conceived by Noblit and Hare (1988) as a method of synthesis whereby interpretations could be constructed from two or more ethnographic studies and arose from

Figure 1: Meta Aggregation of Study Findings: Systematic review on the experiences of caregivers in providing home-based care to persons with HIV/AIDS in Africa



the critique of a series of ethnographic studies examining desegregation in five schools in North America, where traditional synthesis attempts had been criticized as lacking in theoretical depth, explanatory detail and the types of answers policy makers were looking for.

Meta Ethnography arose from within the social sciences and seeks to give meaning to a set of texts, much the same way ethnography does in primary qualitative research – meta ethnography seeks to generate new, inductive interpretations, not present a summary (aggregative or pooled) (Noblit and Hare 1988). Although Noblit and Hare's (1988) position Meta Ethnography as "interpretivist, this is not addressed in depth. With its focus on the reconceptualizing of findings reported in papers included in a Meta Ethnography, the approach appears to be constructivist rather than interpretivist (constructivists extends their concern with knowledge as produced and interpreted to an anti-essentialist level and argue that knowledge and truth are the result of perspective (Schwandt, 1994: 125) so that all truths are relative to some meaning context or perspective.

Doyle (2003) describes Meta Ethnography as an attempt to reconceptualize research findings into new contributions to knowledge. It draws on the findings and interpretations of qualitative research using a purposive sampling method, and the analysis is a process of iterative construction of emic interpretations with the goal of producing new theoretical understandings.

This focus on re-conceptualising research findings (as compared to the search for common meaning across qualitative studies that underpins Meta Aggregation) draws from, according

to Lockwood (2011), the Hermeneutic constructivist position. Lockwood (2011) suggests that the hermeneutics of Heidegger (1962) focuses on social constructivism. Heideggerian hermeneutics (Heidegger 1962) assumes that interpretation involves presuppositions – Inwood, in describing this, states that ‘to interpret something as a book I must be familiar with a world in which books have a place, a world of rooms, furniture, shelves, readers’ (Inwood 1998, 387). Thus, eliciting meaning from data requires interaction between the data and those interpreting it and leads to a re-conceptualisation or a constructivist interpretation. Whilst the Husserlian interest in identifying common meaning through attempting to “bracket” one’s own presuppositions to interpret data may exemplify the basis of Meta Aggregation, the Heideggerian imperative to engage with and involve one’s own understandings to construct meanings from data may be seen to be the basis of Meta Ethnography.

Meta ethnography, as developed by Noblit and Hare (1988) was initially developed as a process to synthesise findings of two or more studies and was not, in its early iterations, related to contemporary interests in the systematic review of evidence. Many later synthesists have further developed the original ideas of Noblit and Hare and have argued that it is an appropriate component of systematic reviews, much as the Meta-Analysis of statistical data is a component of systematic reviews of quantitative research (for example Popay, Rogers and Williams 1998; Britten et al 2002; Campbell et al 2003; Dixon-Woods, Booth and Sutton 2007; Dixon-Woods et al 2007).

Meta Ethnography is an iterative structure and process driven approach to synthesizing qualitative research findings. It involves selecting studies and reading them repeatedly and noting down key concepts. Synthesists consider the concepts they identify in papers raw data which are then analysed to produce a synthesis. Unlike Meta Aggregation, where the findings are extracted as they are written by the study author, in Meta Ethnography the concepts are derived from the interpretations of the synthesist and therefore may not have been explicitly recorded in the original studies. Studies are purposively selected – some (Dixon-Woods, Bonas et al. 2006) advocate for maximal variation sampling to ensure diverse views are not lost. Undertaking an inventory of studies is used to determine which will be included in the analysis. The choice of particular cases is conceptually driven rather than representative and may be driven by studies that provide thickness or richness of description. There is though, no consensus on where to start reading (Munro, Lewin et al. 2007). The criteria for inclusion of individual studies are based on conceptual considerations rather than methodological quality (Noblit & Hare, 1988; Sandelowski et al., 1997).

The process of Meta Ethnography was originally described by Noblit and Hare (1988) as consisting of 7 phases:

1. Identification of a research interest
Positioned within the domain of interest where “how” or “why” type questions can be raised and answered.
2. Deciding which studies to include
With translation, not generalization as the goal, there was no intent that searching be systematic, comprehensive or exhaustive. Noblit and Hare (1988) argue that there is no legitimate basis for such searching in ME. Rather they advocate consideration of the target audience information needs.

3. Reading the studies

Reading and notation of metaphors occurs concurrently and recursively, steps 3 and 4 are therefore not truly separate steps and researchers move between them several times.

4. Determining how the studies are related

Collating lists of metaphors from included papers and juxtaposing them to identify the relationship between studies

5. Translating the studies in to each other

This is first order synthesis. Treating accounts as analogies “. . . this one is like that one except . . .” although Noblit and Hare (1988) insist that the richness of each account not be lost, nor the link between metaphors within an account be lost.

6. Synthesizing the translations

This is second order synthesis. The process is to review each of the themes or metaphors from translation that can be encompassed by other themes or metaphors. Synthesis may be reciprocal, refutational or line of argument

Reciprocal translation is where it is considered appropriate to bring together the metaphors of one paper within the metaphors of another paper or papers.

Refutational translation is more problematic as it must take into consideration “the relationship” between competing explanations or discourses, description on how to do this are scarce (Munro, Lewin et al. 2007). Munro, Lewin et al. (2007) also suggest that refutations are rarely clear in their relationship to the themes or metaphors of the alternate paper/papers included in the refutation.

Line of argument translation is more concerned with inference – it asks the question what do the parts of the concept under examination say about the whole of the concept? It is this aspect of Meta Ethnography that most resembles grounded theory (Glasner and Strauss 1967), Noblit and Hare (1988) suggest either clinical inference or grounded theory as an appropriate method of analysis for line of argument synthesis.

7. Expressing the Synthesis

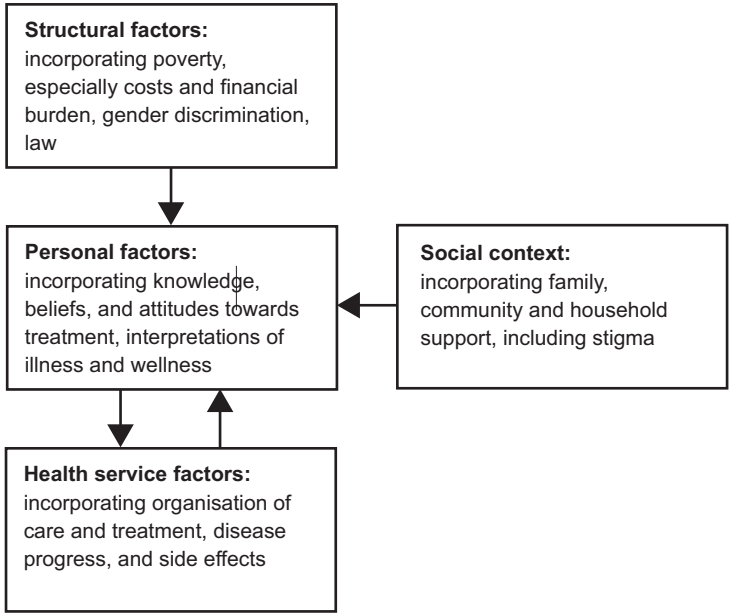
Noblit and Hare describe Meta Ethnographic synthesis as the synthesis of interpretive explanations that are assumed to be metaphoric in essence, and hence are abstract. The goal of such synthesis is, as with all forms of synthesis, to represent in reduced form the complex whole. This process of metaphoric reduction seeks to achieve abstraction while maintaining complexity and create translations that maintain the relationships between concepts (1988:37).

Two Meta Ethnographies tend to dominate the literature in terms of published examples that have been subject to some critique (Britten, Campbell et al. 2002; Munro, Lewin et al. 2007).

A Meta Ethnographic Review Example

Monro et al (2007) conducted a systematic review on patient adherence to tuberculosis treatment using Meta Ethnography. The review focused on patients, carers or health professionals delivering directly observed treatment and the phenomenon of interest was the perceptions of adherence. The review considered studies on the perception of adherence. Studies were assessed using a checklist and data were extracted using a standardized form. The synthesis

Figure 2: Meta Ethnography Findings: Patient adherence to Tuberculosis treatment



Note:
↓ ↑ suggest a bi-directional relationship between factors. For example, health service interventions directed at patients are likely to influence patient adherence behaviour through the filter of “personal factors”. Similarly, patients’ interactions with health services are likely to be influenced by their knowledge, attitudes, and beliefs about treatment as well as their interpretations of illness and wellness.

involved reciprocal translation and the development of a line of argument. Following screening, 44 papers were included; eight first order interpretations and six second order interpretations led to four elements of the final line of argument (Figure 2).

Conclusion

The qualitative researcher, in analyzing qualitative data, is involved in synthesizing the words of participants or the text of observation notes through categorizing and developing descriptors in the form of themes or other groupings.

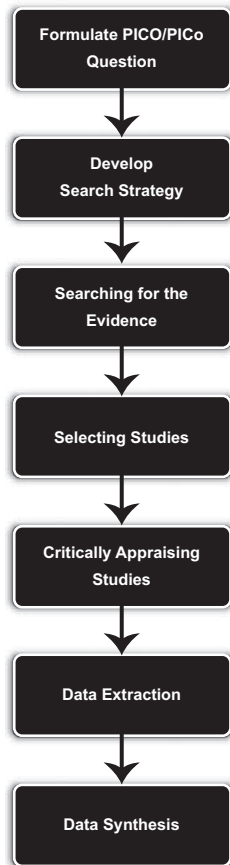
Metasynthesis, as a “higher order form of synthesis” is a process of combining the findings of individual studies (that is, cases) to create summary statements that authentically describe the meaning of these themes (or cross-case generalizations).

Chapter 3:

The Synthesis of Qualitative Evidence using Meta Aggregation

The meta aggregative approach is sensitive to the practicality and usability of the primary author’s findings and does not seek to re-interpret those findings (as in constructivist methods of qualitative synthesis). A strong feature of the Meta-Aggregation is that it seeks to move beyond the development of a conceptualisation in order to produce declaratory or directive statements to guide practitioners and policy makers in contrast to Meta-Ethnography (which focuses on the interactive construction of emic interpretations with the goal of producing new theoretical understandings).

Figure 3: The Systematic Review Process



The usefulness of meta-ethnography lies in its ability to generate theoretical understandings that may or may not be suitable for testing empirically. Textual Narrative Synthesis is useful in drawing together different types of non-research evidence (e.g. qualitative, quantitative, economic), and Thematic Synthesis is of use in drawing conclusions based on common elements across otherwise heterogeneous studies. It can be argued, however, that these approaches do not seek to provide guidance for action and aim only to ‘anticipate’ what might be involved in analogous situations and to understand how things connect and interact. Meta-aggregation is our preferred approach for developing recommendations for action.

Meta Aggregation and the Systematic Review

The approach to Meta-Aggregation we focus on in this text was developed to mirror the role of Meta-Analysis in the systematic review of quantifiable evidence and is therefore usually conducted as a component of a systematic review of qualitative evidence. The systematic review process consists of the development of an apriori protocol and includes the formulation of a question, searching for the evidence; selecting papers that meet the inclusion criteria; critically appraising papers to determine if, on the basis of methodological quality, they merit inclusion in the review; extracting data from the included studies; and “pooling” or synthesizing data across the studies included (Figure 3)

An apriori systematic review protocol is important because it pre-defines the objectives and methods of the systematic review. It is a systematic approach to the conduct and report of the review that allows transparency of process, which in turn allows the reader to see how the findings and recommendations were arrived at. The protocol details the criteria the reviewers will use to include and exclude studies, to identify what data is important and how it will be extracted and synthesized. A protocol provides the plan or proposal for the systematic review and as such is important in maintaining rigor. Any deviations between the protocol and systematic review report should be discussed in the systematic review report.

Chapter 4:

Developing a protocol for an aggregative review of qualitative evidence

Review title

The title of the protocol should be as descriptive as is reasonable and reflect the systematic review type to be conducted. A range of mnemonics have been described for different types of review (and research) questions, with the PICo mnemonic being the most useful device to construct a clear and meaningful title for reviews of qualitative evidence. The PICo mnemonic reinforces to the reviewer the importance of needing to be clear about the *Population, the Phenomena of Interest and the Context* and can provide potential readers with a significant amount of information about the focus, scope and applicability of a review to their needs as the following example illustrates:

The meaning of smoking to young women in the community, and their experiences of smoking cessation as a primary health care intervention: a systematic review.

This example provides readers with a clear indication of the population (young women), the phenomena of interest (the meaning of smoking and the experience of smoking cessation interventions, and the context (community and primary care) as well as stating that it is a systematic review.

Question development

Developing a good review question is the critical first step in undertaking a sound systematic review. The review question structures key components of the review: objectives, inclusion/exclusion criteria and the search strategy. The PICo is a useful tool as it encourages the review team to breaking down and thinking through the components of a review idea or topic area. It is critical that reviewers dedicate time on question development to arrive at a clear and explicit question that is well thought through.

Background

The background should describe the issue under review (phenomena of interest) the target population/participants and the context. The background is where the review team provides detail on each of these question elements to justify the conduct of the review. Defining key concepts is also important, particularly when considering an international audience. When complex or multifaceted phenomena are being described, it is important to explain this fully for an international readership.

Systematic reviewers place significant emphasis on a comprehensive, clear and meaningful background section to every systematic review, particularly given the international circulation of systematic reviews, variation in local understandings of clinical practice, health service management and client/patient preferences and experiences. It is often as important to justify why elements are not to be included. The background should avoid making value-laden

statements unless they are specific to papers that illustrate the topic and/or the need for a systematic review of the topic. For example, “young women were found to take up cigarette smoking as an expression of independence or a sign of self confidence.” Such statements in the background need to be balanced by other points of view, emphasizing the need for the synthesis of potentially diverse bodies of literature.

Objectives

The objectives focus the development of the specific review outcomes of interest. Clarity in the objectives facilitates more effective searching, and provides a structure for the development of the full review report. The objectives must be stated in full. Conventionally, a statement of the overall objective is made and elements of the review are then listed as review questions. For example:

The objective of this review is to establish the meaning of smoking and the experience of smoking cessation for young women in community settings.

The specific questions to be addressed are:

*What meaning do young women who smoke tobacco place upon smoking tobacco?
And what is their experience of programmed and/or self-guided approaches to smoking cessation?*

Criteria for inclusion/exclusion

Population

In our example, the PICO describes the population (young women) within a specific setting (the community). Specific reference to population characteristics, either for inclusion or exclusion, are grounded in clear scientific justification(s) rather than unsubstantiated clinical, theoretical or personal reasoning. The term population is used but does not refer to aspects of population pertinent to quantitative reviews – such as sampling methods, sample sizes or homogeneity. Rather, general population characteristics such as adult, pediatric, male or female according to their relevance to the review question are detailed in this section. In addition population characteristics as they relate to a specific disease, intervention, interaction with health professionals, or meanings individuals associate with a phenomena are examples of the types of population characteristics that need to be considered.

Phenomena of interest

In the example above, the phenomenon of interest is young women’s experiences in relation to the uptake and/or cessation of tobacco smoking. The level of detail ascribed to the phenomena at this point in protocol development may vary with the nature or complexity of the topic. It is often clarified, expanded or revised as the protocol develops.

Context

In a qualitative review, context will vary depending on the objective of the review, and the specific questions constructed to meet the objective. Context may include but is not limited to consideration of cultural factors such as geographic location, specific ethnic or gender

based interests, detail about the setting such as acute care, primary care, or the community as they relate to the experiences or meanings individuals or groups reported in studies. It is important to think through the desired context before narrowing it. For example if you say your context is hospital environments then any research on your topic that is done in a community primary care clinic would need to be excluded. You need to ask yourself for what purpose you need the exclusion. As in all parts of a systematic review your decision needs to be transparent.

Types of studies

This section should flow naturally from the key criteria that have been established to this point, and particularly from the objective and questions the review seeks to address. There should be a statement about the primary study type and the range of studies that will be used if the primary study type is not found, for example:

This review will consider interpretive studies that draw on the experiences of young women with smoking and smoking cessation including designs such as phenomenology, grounded theory and ethnography. It is also important not to limit yourself to a specific type of study as you may find that once you commence searching the literature that the question of interest has been largely addressed using a specific research method. Therefore, always include the caveat: 'not limited to' when provide examples of research methods to be included in the review. Always keep in mind that there is a possibility that there has not been any formal research undertaken related to the question of interest. Therefore it is important to include statements such as: "In the absence of research studies, other text such as opinion papers and reports will be considered in a narrative summary".

Search strategy

The comprehensiveness of searching and the documentation of the databases searched is a core component of the systematic review's credibility. Systematic reviews are international sources of evidence; particular nuances of local context should be informed by and balanced against the best available international evidence. The protocol provides a detailed strategy that will be used to identify all relevant international research within an agreed time frame. This includes databases that will be searched, and the search terms that will be used. In addition to this, it specifies what research methods/methodologies will be considered for inclusion in the review (e.g. phenomenology, ethnography). Quantitative systematic reviews will often include a hierarchy of studies that will be considered, however this is not the case for qualitative reviews. A qualitative review may consider text and opinion in the absence of qualitative research.

Within aggregative reviews the search strategy is described as a three-phase process, beginning with the identification of initial key words followed by analysis of the text words contained in the title and abstract, and of the index terms used in a bibliographic database to describe relevant articles. The second phase is to construct database-specific searches for each database included in the protocol, and the third phase is to review the reference lists of all studies that are retrieved for appraisal to search for additional studies. A concept map can be a valuable tool in helping to 'think through' the key terms needed for a search strategy.

The search strategy also describes any limitations to the scope of searching in terms of dates, resources to be accessed or languages. Each of these may vary depending on the nature of the topic being reviewed, or the resources available to the reviewer. Limiting the search by date may be used where the focus of the review is on a more recent intervention or innovation. However, potentially relevant studies as well as seminal, early studies in the field may be excluded and need to be used with caution, the decision preferably to be endorsed by topic experts and justified in the protocol. In addition to databases of commercially published research, there are several online sources of grey or unpublished literature that should be considered i.e. Grey literature refers to studies with limited distribution (i.e., those not included in computerized bibliographic retrieval systems), unpublished reports, dissertations, articles in obscure journals, some online journals, conference abstracts, policy documents, reports to funding agencies, rejected or unsubmitted manuscripts, non-English language articles, and technical reports. Because grey literature is a source of data that might not employ peer review, critics have questioned the validity of its data and the results of meta-analyses that include it.

Assessment criteria

Each protocol needs to define the checklist to be used to assess the quality of the research studies included in the review. There are a variety of checklists and tools available to assess studies. Most checklists use a series of criteria that can be scored as being met, not met, unclear or not applicable. The decision as to whether or not to include a study can be made based on meeting a pre-determined proportion of all criteria, or on certain criteria being met. It is also possible to weight the different criteria differently.

Data extraction

Data extraction refers to the process of sourcing and recording relevant results from the original (or primary) research studies that will be included in the systematic review. A minimum of two reviewers are needed to review each study for inclusion in the review. It is important that the reviewers use a standard extraction tool that they have practised using and then consistently apply.

As with critical appraisal, optional set text is provided to assist the reviewer. The set text is editable and indicates the types of content considered necessary to the write up of a systematic review, it states:

Qualitative data will be extracted from papers included in the review using the standardised data extraction tool from JBI-QARI. The data extracted will include specific details about the phenomena of interest, populations, study methods and outcomes of significance to the review question and specific objectives.

The data extraction instrument should be read through by both reviewers and each criterion discussed in the context of each particular review. A third reviewer needs to be identified for times when the primary reviewers disagree. Strategies to minimise the risk of error when extracting data from studies include:

- utilising a standardised data extraction form;
- pilot test data extraction tool prior to commencement of review;

Figure 4: JBI QARI Meta-Synthesis

Finding	Category	Synthesised finding
Living with incontinence limits social activity (U)	Being incontinent is embarrassing	<p>People with MS and IC May need to be assisted to develop their own strategies to cope with embarrassment, control of their lives and social activity</p> <p>Participants described how being IC is embarrassing and makes them feel they have no control. They overcame this through developing coping strategies</p>
Every day is different when managing incontinence (IC)		
The men perceived that living with MS and IC meant that they no longer had control of their body (IC)	Loss of Control	
People with MS and IC developing their own strategies to cope (IC)	People with MS and IC Need to Develop their own strategies	
The men were motivated to make changes in their lives by developing strategies to overcome problems (IC)		

- train and assess data extractors; and
- have two people extract data from each study.

Unlike experimental studies, where reviewers can, if necessary, contact authors of publications and seek assistance in providing raw data, in qualitative studies this is not generally required as the reviewer only works with the findings reported by the author in each study. Once the detail about the nature of the publication, its setting, methodologies, methods and other relevant data have been extracted, the focus turns to identifying particular findings.

Data synthesis

In meta analysis only the data to be pooled must come from studies using the same method (RCT's, Cohort etc). This is not the case with meta aggregation. Once the studies have been critically appraised and seen to be credible the data can be grouped together from a variety of different study methods (Phenomenology, Ethnography, Content Analysis etc).

Data synthesis is an interactive process that involves a careful and repetitive reading of all pieces of text extracted during the data extraction phase. Through this process, key pieces of discreet text are merged according to their resonance with each other. There is a variety of existing software tools that facilitate this process. The JBI-QARI software is used here as an example (Figure 4).

The reviewers carefully identify similarities/ themes between included studies and in doing so reach an aggregated position about what each individual text is concluding.

Narrative Summary

The protocol should also describe a process for developing a narrative summary to anticipate the possibility that aggregative synthesis is not possible. Narrative summary draw upon the data extraction from research undertaken on the phenomena of interest but undertaken using different research methods. The emphasis is on the textual summation of study characteristics as well as data relevant to the specified phenomena of interest.

Conflict of Interest

A statement should be included in every review protocol that either declares the absence of any conflict of interest, or describes a specified or potential conflict of interest.

Acknowledgements

The source of financial grants and other funding must be acknowledged, including the reviewers' commercial links and affiliations. The contribution of colleagues or Institutions should also be acknowledged.

References

Protocols most often use Vancouver style referencing. References should be numbered in the order in which they appear with superscript Arabic numerals in the order in which they appear in text. Full reference details should be listed in numerical order in the reference section.

More information about the Vancouver style is detailed in the International Committee of Medical Journal Editors' revised 'Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication', and can be found at <http://www.ICMJE.org/>

Appendices

Appendices should be placed at the end of the protocol and be numbered with Roman numerals in the order in which they appear in text. At a minimum this will include critical appraisal and data extraction tools.

Conducting a Systematic Review of Qualitative Evidence Using Meta-aggregation

Chapter 5:

Searching for Qualitative Evidence

The comprehensiveness of searching and the documentation of the databases searched is a core component of the credibility of any systematic review. Systematic literature searching for qualitative evidence presents particular challenges. Many databases lack detailed thesaurus terms either for qualitative research as a genre or for specific methods. Additionally, changes in thesaurus terms means reviewers need to be cognizant of the limitations in each database they use. Some early work has been undertaken to examine searching, and suggests a combination of thesaurus terms and specific method terms be used to construct search strategies (Shaw, Booth et al. 2004). Unlike the highly 'specific' and 'sensitive' search filters developed for RCT's, Shaw suggests that the search strategies for qualitative reviews need to be more iterative drawing upon strategies beyond subject matter databases such as word of mouth; snowballing techniques etc. There is insufficient evidence to suggest that searching a particular number or even particular databases will identify all of the evidence on a particular topic, therefore a search should be as broad and as inclusive as possible.

Subject qualifiers in databases that may be helpful in constructing a search strategy

Search filters are pre-tested strategies that identify articles based on criteria such as specified words in the title, abstract and keywords. They can be of use to restrict the number of articles identified by a search from the vast amounts of literature indexed in the major medical databases. Search filters look for sources of evidence based on matching specific criteria – such as certain predefined words in the title or abstract of an article. Search filters have strengths and weaknesses:

- (i) Strengths: they are easy to implement and can be pre-stored or developed as an interface
- (ii) Limitations: database-specific; platform-specific; time-specific; not all empirically tested and therefore not reproducible; assume that articles are appropriately indexed by authors and databases.

Nevertheless there is a common language shared between databases that is valuable for a reviewer to become familiar with. Following are some key to terms used in searching:

- ab = words in abstract
- exp = before an index term indicates that the term was exploded
- hw = word in subject heading
- mp = free text search for a term
- pt = publication type
- *sh = subject heading
- ti = words in title
- tw = textwords in title/abstract
- * = a wildcard and is placed at the end or the beginning of a term and used when you want the search engine to fill in the blank for you. For the wild card to work there must be at least three consonants (for example smok* would return the terms smoke; smoking; smokes etc)
- ? = in middle of term indicates use of a wildcard (for example the search term s?n would return the terms sun; son and sin)
- / = MeSH subject heading (and includes all subheadings being selected)
- \$ = truncation symbol (for example the search term smok\$ would return the terms smoke; smoking and smokes)
- adj = two terms where they appear adjacent to one another (so adj4, for example, is within four words)

Generic medical/science databases

One of the most widely searched databases is PubMed, but often MEDLINE and PubMed are used interchangeably. There are in fact some important differences. PubMed is updated more quickly than MEDLINE and PubMed indexes more journal titles and includes the database "Old MEDLINE" as well.

MEDLINE (Medical Literature Analysis and Retrieval System Online) is the U.S. National Library of Medicine's main bibliographic database with references to journal articles in biomedicine and the life sciences. This is the main component of PubMed, which provides access to MEDLINE and some other resources, including articles published in MEDLINE journals that are beyond the scope of MEDLINE, such as general chemistry articles. Approximately 5,200 journals published in the United States and more than 80 other countries are selected and indexed for MEDLINE. A distinctive feature of MEDLINE is that the records are indexed with NLM's controlled vocabulary, the Medical Subject Headings (MeSH®).

In addition to MEDLINE citations, PubMed also contains:

- In-process citations which provide a record for an article before it is indexed with MeSH and added to MEDLINE or converted to out-of-scope status.
- Citations that proceed the date that a journal was selected for MEDLINE indexing (when supplied electronically by the publisher).
- Some old MEDLINE citations that have not yet been updated with current vocabulary and converted to MEDLINE status.

- Citations to articles that are out-of-scope (e.g., covering plate tectonics or astrophysics) from certain MEDLINE journals, primarily general science and general chemistry journals, for which the life sciences articles are indexed with MeSH for MEDLINE.
- Some life science journals that submit full text to PubMed Central® and may not yet have been recommended for inclusion in MEDLINE although they have undergone a review by NLM, and some physics journals that were part of a prototype PubMed in the early to mid-1990's.
- Citations to author manuscripts of articles published by NIH-funded researchers.

One of the ways users can limit their retrieval to MEDLINE citations in PubMed is by selecting MEDLINE from the Subsets menu on the Limits screen. Other PubMed services include:

- Links to many sites providing full text articles and other related resources
- Clinical queries and Special queries search filters
- Links to other citations or information, such as those to related articles
- Single citation matcher
- The ability to store collections of citations, and save and automatically update searches
- A spell checker
- Filters to group search results

NLM distributes all but approximately 2% of all citations in PubMed to those who formally lease MEDLINE from NLM. MEDLINE® is the U.S. National Library of Medicine's® (NLM) premier bibliographic database that contains approximately 18 million references to journal articles in life sciences with a concentration on biomedicine.

Ovid is the search system provided to the Health Sciences/UCH/TCH community by the Health Sciences Library. It includes MEDLINE, as well as 12 other databases. PubMed is provided free of charge by the National Library of Medicine. PubMed includes MEDLINE, as well as Pre-MEDLINE and select online publications provided directly from publishers. Table 3 is a brief list of selected features.

Grouping Terms Together Using Parentheses

Parentheses (or brackets) may be used to control a search query. Without parentheses, a search is executed from left to right. Words that you enclose in parentheses are searched first. Why is this important? Parentheses allow you to control and define the way the search will be executed. The left phrase in parentheses is searched first; then based upon those results the second phrase in parentheses is searched.

Grey or Gray Literature, Deep Web searching

Developing a Search Strategy for Grey literature

Since the mid-1980s and particularly since the explosion of the Internet and the opportunity to publish all kinds of information electronically, there has been an 'information revolution'. This revolution is making it increasingly impossible for people to read everything on any particular subject. In this case medicine, healthcare, nursing or any other evidence-based field are no exception. There is such a huge amount of data being written, published and cited that Internet search engines and medical specialist databases such as MEDLINE, EMBASE, CINAHL,

Table 3. Features of Ovid and PubMed versions of Medline

Selected Ovid Features	Selected PubMed Features
Common search interface for 11 databases in a variety of convenient groupings.	Access to MEDLINE and PREMEDLINE. Links to NCBI to search Entrez Gene and other genetics databases.
Ability to rerun your search strategy in other Ovid databases.	Searches seamlessly across MEDLINE and PREMEDLINE. Can switch to other NCBI databases via a drop down menu.
Article Linker box connects user to over 30,000 full text online journals available via Health Sciences Library subscriptions. Ovid also provides links to many online full text articles via a "Full Text" link.	Users can switch from "summary" to "abstract" display and click on the Article Linker box to access the Health Sciences Library's online journals. PubMed also provides Links to publisher sites for electronic journals (may require subscription for full-text).
Full text of approx. 270 clinical medical journals.	Users can use the "Article Linker" box to link-out to the full text version of any article. PubMed also provides Links to publisher sites for electronic journals (may require subscription for full-text).
Can limit to over 15 different specific subject or journal subsets, e.g. AIDS, bioethics, cancer, complementary medicine, dentistry, history of medicine, nursing, toxicology.	Can limit to any of 13 journal subsets.
Use "Find Similar" to automatically retrieve citations on similar topics.	"See Related Articles" creates a search to find articles related to a selected article – a particularly valuable function for authors of qualitative systematic reviews as this is similar to a 'snowballing' technique.
Search strategy recovery not available once the user has logged off.	Search strategies are retained in History for eight hours.
Can save searches for subsequent use or may request periodic e-mail updates (Auto Alerts) to a search.	Can register for My NCBI to save searches, set up e-mail updates, and customize filters for displaying results.
Ability to e-mail results to yourself or others.	Ability to e-mail results to yourself or others via the "Send To" e-mail feature
Common limits may be applied from the initial search screen.	Limits link is available on the initial search screen.
Search terms automatically map to MeSH headings.	Search terms map to MeSH headings and are also searched as text words.

(continued)

Table 3. Features of Ovid and PubMed versions of Medline (*Continued*)

Selected Ovid Features	Selected PubMed Features
MeSH terms are not automatically exploded.	MeSH terms are automatically exploded.
MEDLINE updated weekly; PREMEDLINE updated daily.	PREMEDLINE updated daily.
“Clinical Queries” and “Expert Searches” may be used for quality filtering in MEDLINE and CINAHL.	“Clinical Queries” may be used to retrieve quality research articles. Systematic Reviews and Medical Genetics searches are also available on the “Clinical Queries” page.
“Find Citation” feature can be used to locate a citation when you have incomplete information.	“Citation Matcher” feature can be used to find citations when you have incomplete information.
3 to 32 week time lag from journal publication to Ovid MEDLINE access.	1 to 8 week time lag from journal publication to PubMed access.

Cochrane Library, the JBI Library or PsycINFO, cannot hope to catalogue or index everything. There are therefore valuable sources of evidence that can prove useful when doing systematic reviews, but have not yet been ‘captured’ by commercial electronic publishers.

Grey (or gray – alternative spelling) literature includes documents such as:

- technical reports from government, business, or academic institutions
- conference papers and proceedings
- preprints
- theses and dissertations
- newsletters
- raw data such as census and economic results or ongoing research results

The US Interagency on Gray Literature Working Group (1995) defined grey literature (or ‘grey lit’ as it is sometimes referred to in the information management business) as: “foreign or domestic open source material that usually is available through specialised channels and may not enter normal channels or system of publication, distribution, bibliographical control or acquisition by booksellers or subscription agents”.

When building a search strategy for grey literature, it is important to select terms specifically for each source. To be consistent and systematic throughout the process, using the same keywords and strategy is recommended. In using mainstream databases, or Google-type searches (including GoogleScholar), it is best to draw from a list of keywords and variations developed prior to starting the search. It is important to create a strategy, compile a list of keywords, wildcard combinations and identify organisations that produce grey literature. If controlled vocabularies are used, record the index terms, qualifiers, keywords, truncation, and wildcards.

Searching the medical grey literature can be time-consuming because there is no 'one-stop shopping' database or search engine that indexes materials the way, for example CINAHL does for nursing and allied health or MEDLINE does for the biomedical sciences. Two websites have become particularly useful to identify qualitative grey literature:

1. The Mednar database (<http://mednar.com/mednar/>)
2. Qualitative times website (<http://www.qualitativeresearch.uga.edu/QualPage/>)

It should be remembered that the level of access (complete or select groupings of journals etc) to bibliographic databases depends on subscriptions and the search interface will vary depending on the database vendor (for example Ovid, EBSCO, ProQuest, etc) or whether you access MEDLINE via the free PubMed interface. There are a number of other search engines very useful for finding health-based scientific literature:

- www.scirus.com
- www.metacrawler.com
- www.disref.com.au/
- www.hon.ch/Medhunt/Medhunt.html
- www.medworld.stanford.edu/medbot/
- <http://sumsearch.uthscsa.edu/cgi-bin/SUMSearch.exe/>
- www.intute.ac.uk/healthandlifesciences/omnilost.html
- www.mdchoice.com/index.asp
- www.science.gov/
- <http://www.eHealthcareBot.com/>
- <http://medworld.stanford.edu/medbot/>
- <http://omnimedicalsearch.com/>
- <http://www.ingentaconnect.com/>
- <http://www.medical-zone.com/>
- Scirus (www.scirus.com), for example, is a science-specific search engine with access to over 410 million science-related web pages (as of February 2011), and it indexes sites that other search engines do not. Its medical sites include ArXiv.org, Biomed Central, Cogprints, DiVa, LexisNexis, and PsyDok. PsyDok is a disciplinary Open Access repository for psychological documents. PsyDok is operated by Saarland University and State Library (SULB), which also hosts the special subject collection psychology and the virtual library psychology. PsyDok is a free, full-text e-print archive of published, peer-reviewed journal post-prints plus pre-publications, reports, manuals, grey literature, books, journals, proceedings, dissertations and similar document types.

There are numerous health information gateways or portals on the Internet containing links to well organised websites containing primary research documents, clinical guidelines, other sources and further links. For example:

- World Health Organisation, <http://www.who.int/library/>
- National Institute on Alcohol Abuse and Alcoholism, <http://www.niaaa.nih.gov/>
- Canadian Health Network, <http://www.canadian-health-network.ca/customtools/homee.html>

- Health Insite, <http://www.healthinsite.gov.au/>
- MedlinePlus, <http://www.nlm.nih.gov/medlineplus>
- National Guidelines Clearinghouse, <http://www.guideline.gov/index.asp>
- National Electronic Library for Health (UK), <http://www.nelh.nhs.uk/>
- Partners in Information Access for the Public Health Workforce, <http://phpartners.org/guide.html>
- Clinical guidelines sites

Universities, colleges, institutes, collaborative research centres (CRCs) provide a range of relevant resources and web links already listed. For example, theses or dissertations are generally included on universities' library pages because these have to be catalogued by library technicians according to subject heading, author, title, etc. University library pages will also have links to other universities' theses collections, for example:

- Dissertation Abstracts
- Theses Canada Portal
- Networked Digital Library of Theses and Dissertations (NDLTD)
- Index to Theses

Academic libraries' Online Public Access Catalogues (OPACS) are excellent sources of grey literature in that these catalogues provide access to local and regional materials, are sources for bibliographic verification, they index dissertations, government and technical reports, particularly if the authors are affiliated with the parent organisation or agency as scholars or researchers. Authors, if in academic positions, sometimes have their own web pages.

Others working in the specific topic area often already have reference lists that they are prepared to share or names of others working in the same/related fields, for example authors of Cochrane or Joanna Briggs Institute protocols that are not yet completed. This is especially useful for clinicians because they know who works in their specific area of interest. Conference series in the area of interest are also useful sources and can be accessed in academic or national libraries due to the legal deposit rule. Many national libraries collect grey literature created in their countries under legal deposit requirements. Their catalogues are usually available on the Internet. Some also contain holdings of other libraries of that country, as in the Australian National Library's Libraries Australia: <http://librariesaustralia.nla.gov.au/apps/kss>. WORLDCAT is a service that aims to link the catalogues of all major libraries under one umbrella. <http://www.worldcat.org/> The media often reports recent medical or clinical trials and newspaper sites on the Internet may report who conducted a study, where, when, the methodology used, and the nature of the participants to assist in locating an original source.

Other useful tactics include:

- Setting up 'auto alerts' if possible on key databases to learn about new relevant material as it becomes available.
- Joining a relevant web discussion group/list and post questions and areas of interest; contacts may identify leads to follow up.
- Grey literature is increasingly referenced in journal articles, so reference lists should be checked via hand-searching. Hand searching is recommended for systematic

reviews because of the hazards associated with missed studies. Hand searching is also a method of finding recent publications not yet indexed by or cited by other researchers.

Finding grey literature on government websites

Generally, most health-related government-sponsored or maintained websites will go to the trouble of showing:

- (a) how or if their documents are organised alphabetically, topically or thematically;
- (b) how individual documents are structured, i.e. contents pages, text, executive summary, etc.;
- (c) database-type search strategies to find them;
- (d) links to other web sites or other documents that are related to the documents that they produce;
- (e) when their collection of grey literature has been updated; and
- (f) documents in PDF or Microsoft Word downloadable form.

A brief grey literature case study

Consider a search on the topic: “the experience of acupuncture in people with drug & alcohol dependence”. With this query you may wish to explore the meaning of acupuncture in the management of drug and alcohol dependence. The goal of this study is to uncover as many qualitative studies as possible, and to perform a meta-aggregation.

Step One – Mainstream Database Search

Do your initial research in the mainstream databases, such as:

- PubMed
- EMBASE
- CINAHL
- PsycINFO
- Sociological Abstracts
- AMED – Allied and Complementary Medicine Database

There may be a fair bit of duplication between some of these but you should also note down (perhaps as two separate columns) two things: (a) the keywords or terms used, not forgetting to check if the database uses a thesaurus or controlled vocabulary of indexing terms; and (b) the names of institutions, organisations, agencies, research groups mentioned.

The terminology that could be used in various combinations when searching, (including wild-cards and truncation, which may vary from database to database and should therefore be checked), may include the following:

acupuncture, meridian, acupressure, electroacupuncture, shiatsu, drug, polydrug, substance, alcohol, tranquiliz, narcotic, opiate, solvent, inhalant, street drug, prescri*, non-prescri*, nonprescri*, abuse, use, usin*, misus*, utliz*, utilis*, depend, addict, illegal, illicit, habit, withdraw, behavio*, abstinen*, abstain*, abstention, rehab, intox*, detox*, dual, diagnosis, disorder, experience, qualitative, phenomenology, ethnography, interview*,*

observation*. [Note - in the example, the * has been used to indicate either a wildcard or truncation symbol.]

Step Two - Contacting Directories and Organisations

Do a Yahoo or Google Search using keywords Acupuncture, Alternative Medicine, Alternative Medicine databases, Acupuncture Organisations, in combination with the terms from your initial database search. Remember that Google.com 'Advanced Search' is best for this part of the search as it allows you to 'limit' your inquiry in many ways (go to http://www.google.com.au/advanced_search?hl=en).

For our topic, here are a few organisations that are relevant to your search:

- ETOH - Alcohol and Alcohol Problems Science Database, referred to as ETOH, <http://etoh.niaaa.nih.gov/Databases.htm>
- National Institute on Alcohol Abuse and Alcoholism (NIAAA), <http://www.niaaa.nih.gov/>
- National Institute on Drug Abuse (NIDA), <http://www.nida.nih.gov/>
- Canadian Centre on Substance Abuse (CCSA), <http://www.ccsa.ca/CCSA/EN/TopNav/Home/>
- National Center for Complementary and Alternative Medicine (NCCAM), <http://nccam.nih.gov/health/acupuncture/>
- National Acupuncture Detoxification Association (NADA), <http://www.acudetox.com>

Step Three – Finding and Searching Specialised Databases for Grey Literature

Contacting relevant organisations noted in your mainstream database search is a good way to assess what resources exist in the form of special databases, library catalogues, etc. Some websites have resources providing a 'jumping-off' point for your search deeper into the World Wide Web. Finding the web sites in Step Two and 'digging deeper' into them will enable you to discover the documents they have, and their links to more precise sites with databases that specialise in acupuncture issues. Examples of these are as follows:

- HTA Database, <http://144.32.150.197/scripts/WEBC.EXE/NHSCRD/start>
- The Traditional Chinese Drug Database (TCDBASE), <http://www.cintcm.com/index.htm>
- Drug Database (Alcohol and other Drugs Council of Australia), <http://203.48.73.10/liberty3/gateway/gateway.exe?application=Liberty3&displayform=opac/main>
- Canadian Centre for Substance Abuse, http://www.ccsa.ca/CCSA/EN/Addiction_Databases/LibraryCollectionForm.htm
- Combined Health Information Database (CHID), <http://chid.nih.gov/search/>

Grey literature differs from other published literature in that it is:

- Not formally part of 'traditional publishing models'. Producers, to name a few, include research groups, non-profit organisations, universities and government departments.
- In many cases high-quality research still waiting to be published and/or indexed.
- Not widely disseminated but nonetheless important in that an infrastructure does exist to disseminate this material and make it visible.
- Some organisations create their own reports, studies of trials, guidelines, etc.
- Specialised strategies are still needed to facilitate identification and retrieval.

Librarians try to adopt pro-active approaches to finding this material, though web-based searching, self-archiving and open access are helping to facilitate access. If you have access to a library service, your librarian should be able to assist you in your quest for uncovering the grey literature in your area of interest.

Intute is a free online service providing access to the very best web resources for education and research. All material is evaluated and selected by a network of subject specialists to create the Intute database. This database includes pre-vetted resources by subject-specialists in areas of health, science, tech, social sciences, and arts/ humanities.

With millions of resources available on the Internet, it is difficult to find relevant and appropriate material even if you have good search skills and use advanced search engines. Issues of trust, quality, and search skills are very real and significant concerns - particularly in a learning context. Academics, teachers, students and researchers are faced with a complex environment, with different routes into numerous different resources, different user interfaces, search mechanisms and authentication processes.

<http://mednar.com/mednar/> Mednar is a one-stop federated search engine therefore non-indexing, designed for professional medical researchers to quickly access information from a multitude of credible sources. Researchers can take advantage of Mednar's many tools to narrow their searches, drill down into topics, de-duplicates, ranks and clusters results as well as allowing you to discover new information sources. Comprehensively searches multiple databases in real time, instead of crawling and indexing static content like Google or many meta-search engines. Mednar queries select, high quality databases to search simultaneously. It utilizes the native search tools available at each of the 47 related sites/databases. If you follow the search links, you'll find a search box at all of the sources.

<http://worldwidescience.org/index.html> *Another Deep Web search mechanism, WorldWideScience.org* is a global science gateway connecting you to national and international scientific databases and portals. *WorldWideScience.org* accelerates scientific discovery and progress by providing one-stop searching of global science sources. The WorldWideScience Alliance, a multilateral partnership, consists of participating member countries and provides the governance structure for WorldWideScience.org. It's very good for a global perspective, includes OpenSIGLE, Chinese, Indian, African, Korean etc sources and the database interface has only been in existence since June 2007.

Thesis/Dissertations

ProQuest Dissertations & Theses Database (PQDT)

With more than 2.3 million entries, the ProQuest Dissertations & Theses (PQDT) database is the most comprehensive collection of dissertations and theses in the world. Graduate students customarily consult the database to make sure their proposed thesis or dissertation topics have not already been written about. Students, faculty, and other researchers search it for titles related to their scholarly interests. Millions of graduate works are listed, with over 1.9 million in full text format. PQDT is a subscription database, so consult your library for availability.

Dissertation Abstracts Online (DIALOG)

This is a definitive subject, title, and author guide to virtually every American dissertation accepted at an accredited institution since 1861. Selected Masters theses have been included

since 1962. In addition, since 1988, the database includes citations for dissertations from 50 British universities that have been collected by and filmed at *The British Document Supply Centre*. Beginning with DAIC Volume 49, Number 2 (Spring 1988), citations and abstracts from Section C, *Worldwide Dissertations* (formerly European Dissertations), have been included in the file. Abstracts are included for doctoral records from July 1980 (*Dissertation Abstracts International*, Volume 41, Number 1) to the present. Abstracts are included for masters theses from Spring 1988 (*Masters Abstracts*, Volume 26, Number 1) to the present.

Individual, degree-granting institutions submit copies of dissertations and theses completed to University Microfilms International (UMI). Citations for these dissertations are included in the database and in University Microfilms International print publications: *Dissertation Abstracts International* (DAI), *American Doctoral Dissertations* (ADD), *Comprehensive Dissertation Index* (CDI), and *Masters Abstracts International* (MAI). A list of cooperating institutions can be found in the preface to any volume of *Comprehensive Dissertation Index*, *Dissertation Abstracts International*, or *Masters Abstracts International*.

Predefined search strategies have been written for qualitative research, however the usefulness of such an approach relies on the author identifying the research as being qualitative and the publisher indexing the work as being qualitative.

Qualitative Databases

British Nursing Index: From the partnership of Bournemouth University, Poole Hospital NHS Trust, Salisbury Hospital NHS Trust and the Royal College of Nursing comes the most extensive and up-to-date UK nursing and midwifery index. It covers all the major British publications and other English language titles with unrivalled currency making it the essential nursing and midwifery database. The database provides references to journal articles from all the major British nursing and midwifery titles and other English language titles. BNI is an essential resource for nurses, midwives, health visitors and community staff.

Academic Search™ Premier (Ebscohost) *Academic Search™ Premier* contains indexing and abstracts for more than 8,300 journals, with full text for more than 4,500 of those titles. PDF backfiles to 1975 or further are available for well over one hundred journals, and searchable cited references are provided for more than 1,000 titles. The database contains unmatched full text coverage in biology, chemistry, engineering, physics, psychology, religion & theology, etc.

HealthSource®:Nursing/Academic Edition (Ebscohost). This resource provides nearly 550 scholarly full text journals focusing on many medical disciplines. Coverage of nursing and allied health is particularly strong, including full text from *Creative Nursing*, *Issues in Comprehensive Pediatric Nursing*, *Issues in Mental Health Nursing*, *Journal of Advanced Nursing*, *Journal of Child & Adolescent Psychiatric Nursing*, *Journal of Clinical Nursing*, *Journal of Community Health Nursing*, *Journal of Nursing Management*, *Nursing Ethics*, *Nursing Forum*, *Nursing Inquiry*, and many more. In addition, this database includes the *Lexi-PAL Drug Guide* which covers 1,300 generic drug patient education sheets with more than 4,700 brand names.

Sociological Abstracts (formerly SocioFile) ex ProQuest CSA Sociological Abstracts provides abstracts of journal articles and citations to book reviews drawn from over 1,800+ serials publications, and also provides abstracts of books, book chapters, dissertations, and

conference papers. Records published by Sociological Abstracts in print during the database's first 11 years, 1952-1962, have been added to the database as of November 2005, extending the depth of the 'backfile' of this authoritative resource.

Many records from key journals in sociology, added to the database since 2002, also include the references cited in the bibliography of the source article. Each individual reference may also have links to an abstract and/or to other papers that cite that reference. A valuable 'snowball' strategy these links increase the possibility of finding more potentially relevant articles. These references are linked both within Sociological Abstracts and across other social science databases available on CSA Illumina.

Academic OneFile *Gale Academic OneFile* is the premier source for peer-reviewed, full-text articles from the world's leading journals and reference sources. With extensive coverage of the physical sciences, technology, medicine, social sciences, the arts, theology, literature and other subjects, *Academic onefile* is both authoritative and comprehensive. With millions of articles available in both pdf and html full-text with no restrictions, researchers are able to find accurate information quickly.

In addition to all of the traditional services available through *InfoTrac*, Gale offer a number of services offered through collaboration with Scientific/ISI. Mutual subscribers of *Academic OneFile* and *Scientific's Web of Science*[®] and *Journal Citation Reports*[®] a reviewer has seamless access to cited references, digital object identifier (DOI) links, and additional article-level metadata, as well as access to current and historical information on a selected journal's impact factor.

Scopus

Scopus is the largest abstract and citation database of research literature and quality web sources. Updated daily, Scopus is the easiest way to get to relevant content fast. Scopus has a variety of functions that assist the reviewer to search a large amount of information quickly for example:

- over 16,000 peer-reviewed journals from more than 4,000 publishers
- over 1200 Open Access journals
- 520 conference proceedings
- 650 trade publications
- 315 book series
- 36 million records
- Results from 431 million scientific web pages
- 23 million patent records from 5 patent offices
- "Articles-in-Press" from over 3,000 journals
- Seamless links to full-text articles and other library resources
- Innovative tools that give an at-a-glance overview of search results and refine them to the most relevant hits
- Alerts to keep you up-to-date on new articles matching your search query, or by favourite author

Subject Heading/Keyword-Related Strategies

The following terms/terminology listed below should be considered (but also brainstorm from these to find similar natural language terms and synonyms) for all the other databases that describe qualitative evidence. In particular, it is recommended that the terms listed below, derived from CINAHL be applied to all the databases not already included in the search filters:

Qualitative Studies – term used to find ‘qualitative research’ or ‘qualitative study’. Investigations which use sensory methods such as listening or observing to gather and organise data into patterns or themes.

Qualitative Validity – term used to find ‘qualitative validities’. The extent to which the research findings from qualitative processes represent reality; the degree to which internal procedures used in the research process distort reality.

Confirmability (Research) - Review of the qualitative research process used to affirm that the data support the findings, interpretations, and recommendations; confirmability audit.

Content Analysis or Field Studies - A methodological approach that utilizes a set of procedures for analysing written, verbal, or visual materials in a systematic and objective fashion, with the goal of quantitatively and qualitatively measuring variables.

Grounded Theory - A qualitative method developed by Glaser and Strauss to unite theory construction and data analysis.

Multimethod Studies - Studies which combine quantitative and qualitative methods.

Structured Categories - A method where qualitative behaviours and events occurring within the observational setting are arranged systematically or quantitatively.

Transferability - Potential to extend the findings of a qualitative research study to comparable social situations after evaluation of similarities and differences between the comparison and study group(s).

Unstructured Categories or Variable - A qualitative or quantitative entity within the population under study that can vary or take on different values and can be classified into two or more categories.

Phenomenology - Method of study to discover and understand the meaning of human life experiences.

Reviewers may use the following methodological index terms (but NOT limit themselves to these) as either subject headings or text words (or a combination of both) that appear in citations’ title or abstract. Use Advanced, Basic, exact phrase, field restrictions (e.g. publication or theory/research type) search strategies according to database.

- ethnographic research
- phenomenological research
- ethnonursing research or ethno-nursing research
- purposive sample
- observational method

- content analysis or thematic analysis
- constant comparative method
- mixed methods
- author citations, e.g. Glaser & Strauss; Denkin & Lincoln; Heidegger, Husserl, etc.
- perceptions or attitudes or user views or viewpoint or perspective
- ethnographic or micro-ethnographic or mini-ethnographic
- field studies hermeneutics
- theoretical sample
- discourse analysis
- focus groups/
- ethnography or ethnological research
- psychology
- focus group or focus groups
- descriptions
- themes
- emotions or opinions or attitudes
- scenarios or contexts
- hermeneutic or hermeneutics
- emic or etic or heuristic or semiotics
- participant observation
- lived experience
- narrative analysis
- discourse analysis
- life experience or life experiences
- interpretive synthesis

Conclusion

Systematic reviews are international sources of evidence; particular nuances of local context should be informed by and balanced against the best available international evidence. The protocol provides a detailed strategy that will be used to identify all relevant international research within an agreed timeframe. This includes databases that will be searched, and the search terms that will be used. In addition to this, it also specifies what research methods/methodologies will be considered for inclusion in the review (e.g. phenomenology or ethnography). While quantitative reviews have a hierarchy of studies that will be considered this does not apply to qualitative reviews.

There should be a statement about the target study type and the range of studies that will be used if the primary study type is not found. Within systematic reviews the search strategy is described as a three-phase process which begins with the identification of initial key words followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe relevant articles. The second phase is to construct database specific

searches for each database included in the protocol. The third stage is to review the reference lists of all studies that are retrieved for appraisal to search for additional studies, for example:

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in each component of this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe articles. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies.

Reviewers are required to state the databases to be searched, the initial key words that will be used to develop full search strategies and if including unpublished studies what sources will be accessed.

The search strategy also describes any limitations to the scope of searching in terms of dates, resources accessed or languages. Each of these may vary depending on the nature of the topic being reviewed or the resources available. Limiting by date may be used where the focus of the review is on a more recent intervention or innovation or where there has been a significant change in practice relevant to the question. Date limiting, however, may exclude seminal early studies in the field and should thus be used with caution; the decision preferably endorsed by topic experts and justified in the protocol. The validity of systematic reviews relies in part to access to an extensive range of electronic databases for literature searching. There is inadequate evidence to suggest a particular number of databases should be included, or even to specify particular databases for inclusion. Thus, literature searching should be based on the principle of inclusiveness, with the widest reasonable range of databases included that are considered appropriate to the focus of the review.

Chapter 6:

Selecting and critically appraising studies

When the search for evidence is complete (or as the search progresses in some cases) reviewers decide which papers found should be retrieved and then subjected to critical appraisal. This initial process is referred to as the selection of papers for appraisal. All selected papers are then subjected to critical appraisal to determine methodological quality.

Selecting studies

Study selection is an initial assessment that occurs following the review search addressing the simple question: “should the paper be retrieved?” Studies in a review will also undergo another ‘round’ of selection in the next systematic step in the review process. This second round of assessment asks a different question: “should the study be included in the review?” - this is critical appraisal. Study selection is performed with the aim of selecting only those studies that address the review question and that match the inclusion criteria documented in the protocol of your review. In order to limit the risk of error two assessors should perform the process. Both assessors will scan the lists of titles, and if necessary abstracts, to determine if the full text of the reference should be retrieved. Sometimes it will be difficult or impossible to determine if the reference matches the inclusion criteria of the review on the basis of the title or abstract alone; in this case the full text should be retrieved for further clarification. It is best to err on the side of caution in this process. It is better to spend a bit more time here, in careful consideration, rather than risk missing important and relevant evidence related to the review question. The entire process must be transparent and clear so that if an independent person were to apply the same inclusion criteria to the same list of citations, they would arrive at the same result of included studies.

Assessment of methodological quality/critical appraisal

The critical appraisal of identified papers is a key and required stage in the process of conducting a qualitative synthesis using meta-aggregation. Critical appraisal is sometimes described as quality assessment and basically involves using a tool(s) to evaluate the quality of a given study. As we have noted previously, critical appraisal is not a necessary stage in some approaches to qualitative synthesis – meta-ethnography for example – indeed, the practice remains contentious. Garratt and Hodkinson (1998:515) argue that “it is both illogical and pointless to attempt to predetermine a definitive set of criteria against which all qualitative research should be judged.” Nonetheless, in recent years the number of critical appraisal and quality assessment tools have increased rapidly (see Spencer, Ritchie et al. 2004).

We take the view that conscientious readers always assess the quality of papers they read, but that this is often done informally. Using a checklist helps formalize and systematize the process, providing an audit trail for the assessments made. Critical appraisal is also a means of engaging with a paper.

There has been a proliferation of critical appraisal instruments designed to evaluate qualitative studies (Dixon-Woods et al 2004). All instruments are generic (in that they are not specific to a particular methodology) and some have been developed specifically for use in systematic reviews. Hannes, Lockwood and Pearson (2010) compare three critical appraisal instruments (the critical appraisal skills program (CASP) tool; the evaluation tool for qualitative studies (ETQS); and the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) tool) in terms of the extent to which they include criteria that can facilitate reviewers in assessing the validity of an original qualitative study. All three instruments were developed in the context of systematic reviews and can be used by reviewers to assist them in assessing the quality of original research articles.

The CASP tool was developed by the Public Health Resource Unit of the National Health Service in collaboration with the U.K. Centre for Evidence Based Medicine and the Birmingham critical appraisal skills program. The instrument elicits an extensive amount of additional information related to how the criteria on rigor and relevance of an original research report should be interpreted (Public Health and Resource Unit, 2009).

The ETQR was developed by the Health Care Practice Research and Development Unit from the University of Salford, in collaboration with the Nuffield Institute and the University of Leeds. This instrument addresses study context, the process of data collection and analysis and focuses on meaning, context, and depth.

The JBI QARI tool was developed through an analysis of the literature with input from a panel of experts from Australian universities and has been extensively piloted and refined before being incorporated into the JBI qualitative assessment and review instrument software developed to assist reviewers in completing systematic reviews of qualitative research (JBI 2007).

Hannes, Lockwood and Pearson conclude that:

Although the CASP tool is a popular appraisal instrument—most likely because it is a user-friendly alternative for novice researchers—it does not score particularly well in evaluating the intrinsic methodological quality of an original study when compared with other instruments. The ETQS provides more detailed instructions on how to interpret criteria than the JBI tool. However, it is the latter, with its focus on congruity, that appears to be the most coherent. (1741-1742)

Of the increasing number of reviews using Meta-Aggregation, almost all have used the JBI-QARI instrument to appraise studies.

The JBI-QARI Approach to Critical Appraisal

The focus of JBI-QARI critical appraisal of qualitative research is on the rigour of the research design and quality of reporting. The process should involve two reviewers who conduct their assessments apart from each other (i.e. the process is blinded) and who then discuss any disagreements. If they are unable to resolve disagreements, a third reviewer may be called on to reach a resolution.

Critical appraisal serves two purposes: firstly, it plays an important role in facilitating reviewers to fully engage with each paper and to become familiar with its contents, features, strengths and weaknesses; and, secondly, it seeks to ensure that only high quality qualitative evidence is included in the meta-synthesis. Qualitative approaches are located in diverse understandings

of knowledge; they do not distance the researcher from the researched. Furthermore, the data analysis is legitimately influenced by researchers when they interpret the data. Consequently, critical appraisal focuses on:

- Congruity between philosophical position adopted by the study and, study methodology; study methods; representation of the data; and interpretation of the results;
- The degree to which the biases of the researcher are made explicit; and
- The relationship between what the participants are reported to have said and the conclusions drawn in analysis.

The Critical Appraisal Criteria

1. Congruity between the stated philosophical perspective and the research methodology

Does the report clearly state the philosophical or theoretical premises on which the study is based? Does the report clearly state the methodological approach adopted on which the study is based? Is there congruence between the two? For example: a report may state that the study adopted a critical perspective and participatory action research methodology was followed. There is congruence between a critical view (focusing on knowledge arising out of critique, action and reflection) and action research (an approach that focuses on working with groups to reflect on issues or practices; to consider how they could be different; acting to change; and identifying new knowledge arising out of the action taken); a report may state that the study adopted an interpretive perspective and survey methodology was followed. There is incongruence between an interpretive view (focusing on knowledge arising out of studying what phenomena mean to individuals or groups) and surveys (an approach that focuses on asking standard questions to a defined study population); a report may state that the study was qualitative or used qualitative methodology (such statements do not demonstrate rigor in design) or make no statement on philosophical orientation or methodology.

2. Congruity between the research methodology and the research question or objectives

Is the study methodology appropriate for addressing the research question? For example:

A report may state that the research question was to seek understandings of the meaning of pain in a group of people with rheumatoid arthritis and that a phenomenological approach was taken. Here, there is congruity between this question and the methodology. A report may state that the research question was to establish the effects of counseling on the severity of pain experience and that an ethnographic approach was pursued. A question that tries to establish cause-and-effect cannot be addressed by using an ethnographic approach (as ethnography sets out to develop understandings of cultural practices) and thus, this would be incongruent.

3. Congruity between the research methodology and the methods used to collect data

Are the data collection methods appropriate to the methodology? For example:

A report may state that the study pursued a phenomenological approach and data was collected through phenomenological interviews. There is congruence between the

methodology and data collection; a report may state that the study pursued a phenomenological approach and data was collected through a postal questionnaire. There is incongruence between the methodology and data collection here as phenomenology seeks to elicit rich descriptions of the experience of a phenomena that cannot be achieved through seeking written responses to standardized questions. There is congruity between the research methodology and the representation and analysis of data.

4. Congruity between the research methodology and the representation and analysis of data

Are the data analyzed and represented in ways that are congruent with the stated methodological position? For example: a report may state that the study pursued a phenomenological approach to explore people's experience of grief by asking participants to describe their experiences of grief. If the text generated from asking these questions is searched to establish the meaning of grief to participants; and the meanings of all participants are included in the report findings, then this represents congruity; the same report may, however, focus only on those meanings that were common to all participants and discard single reported meanings. This would not be appropriate in phenomenological work.

5. There is congruence between the research methodology and the interpretation of results.

Are the results interpreted in ways that are appropriate to the methodology? For example:

A report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to inform practitioners about accommodating individual differences in care. There is congruence between the methodology and this approach to interpretation; a report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to generate practice checklists for assessment. There is incongruence between the methodology and this approach to interpretation as phenomenology seeks to understand the meaning of phenomena for the study participants and cannot be interpreted to suggest that this can be generalized to total populations to a degree where standardized assessments will have relevance across a population.

6. Locating the researcher culturally or theoretically

Are the beliefs and values, and their potential influence on the study declared? The researcher plays a substantial role in the qualitative research process and it is important, in appraising evidence that is generated in this way, to know the researcher's cultural and theoretical orientation. A high quality report will include a statement that clarifies this.

7. Influence of the researcher on the research, and vice-versa, is addressed

Is the potential for the researcher to influence the study and for the potential of the research process itself to influence the researcher and her/his interpretations acknowledged and addressed? For example:

Is the relationship between the researcher and the study participants addressed? Does the researcher critically examine her/his own role and potential influence during data

collection? Is it reported how the researcher responded to events that arose during the study?

8. Representation of participants and their voices

Generally, reports should provide illustrations from the data to show the basis of their conclusions and to ensure that participants are represented in the report.

9. Ethical approval by an appropriate body

A statement on the ethical approval process followed should be in the report.

10. Relationship of conclusions to analysis, or interpretation of the data

This criterion concerns the relationship between the findings reported and the views or words of study participants. In appraising a research paper, appraisers seek to satisfy themselves that the conclusions drawn by the research are based on the data collected; data being the text generated through observation, interviews or other processes.

Conclusion

Although a systematic approach to study selection and critical appraisal is not a requirement in many approaches to synthesising qualitative evidence, Meta-Aggregation regards them as important steps in the systematic review process. Through a careful, structured approach to critical appraisal as detailed above, the review authors are able to determine the quality of existing research related to the phenomena in question. Once a piece of research is seen to fulfil the inclusion criteria established in the review's protocol, critically appraising each of the studies then assists the reviewers in determining if meta aggregation can occur. If the methodological position of the piece of research is unclear and or the findings not credible the recommendation is not to include this piece of research in a meta aggregation. Instead, the review authors would provide a narrative summary of this piece of research whilst providing a clear description of its methodological weaknesses.

One important point to keep in mind is that through the establishment of structured approaches to the critical appraisal of qualitative research, standards for the reporting of qualitative research have also appeared. Formal reporting guidelines that have been developed for randomized controlled trials (CONSORT) (Moher et.al, 2001), diagnostic test studies (STARD), meta-analysis of RCTs (QUOROM), observational studies (STROBE) and meta-analyses of observational studies (MOOSE). Through peer reviewed journals adhering to these standards, important details of the research team, study methods, context of the study, findings, analysis and interpretations will be more consistently available for critical appraisal.

Chapter 7:

Data Extraction

When a study is assessed for its methodological quality and judged to be of sufficient quality to be included in the review, data from the study is extracted. Data extraction has two distinct components: extracting data about the study; and extracting the data embodied in the study. The focus is on “processed data”: that is, the results of the study, rather than the primary data collected from observations, interviews or through other means.

Data extraction: Study details

Data extraction begins with recording of the methodology (such as phenomenology, ethnography or action research), identifying the setting and describing the characteristics of the participants. When data extraction of the study background detail is complete, the extraction becomes highly specific to the nature of the data of interest and the question being asked in the review. Data extraction serves the same purpose across study designs – to summarise the findings of many studies into a single document. Qualitative data extraction involves transferring findings from the original paper using an approach agreed upon and standardised for the specific review. Thus, an agreed format is essential to minimise error, provide an historical record of decisions made about the data in terms of the review, and to become the data set for categorisation and synthesis. Using the JBI-QARI instrument, there is a series of standardised fields related to data extraction in the initial data extraction phase (Figure 5).

Methodology

A methodology usually covers the theoretical underpinnings of the research. In a review, it is useful to add further detail such as the particular perspective or approach of the author’s such as “Phenomenology”; “Critical” or “Feminist” Ethnography.

Method

The method is the way that the data was collected; multiple methods of data collection may be used in a single paper, and these should all be stated. Be sure to specify how the method was used. If for example it was an interview, what type of interview was it; consider whether open or closed questions were used, or whether it was face-to-face or by telephone.

Phenomena of Interest

Phenomena of interest are the focus of an aggregative, qualitative review, whereas in a quantitative review, interventions are the focus. An intervention is a planned change made to the research situation by the researcher as part of the research project. As qualitative research does not rely on having an intervention (as they are traditionally thought of in quantitative research), the focus is called phenomenon/phenomena of interest, which refers to the experience, event or process that is occurring, for example: response to pain or coping with breast cancer.

Figure 5: QARI Initial Data Extraction

Methodology:	
Method:	
Phenomena of Interest:	
Setting:	
Geographical:	
Cultural:	
Participants:	
Data Analysis:	
Authors Conclusion:	
Reviewers Comments:	

Setting

This term is used to describe where the research was conducted - the specific location, for example: at home; in a nursing home; in a hospital; in a dementia specific ward in a sub-acute hospital. However, some research will have no setting at all, for example discourse analysis.

Geographical Context

The Geographical Context is the location of the research. It is useful to be as specific as possible in describing the location, by including not just the country, but whether it was a rural or metropolitan setting, as this may impact upon the research.

Cultural Context

Cultural Context seeks to describe the cultural features in the study setting such as, but not limited to: time period (e.g. 16th century); ethnic groupings (e.g. indigenous people); age groupings (e.g. older people living in the community); or socio-economic groups (e.g. high socio-economic). It is important to be as specific as possible when entering information. This data should identify cultural features such as employment, lifestyle, ethnicity, age, gender, socio-economic class, location and time.

Participants

Information entered in this field should be related to the inclusion and exclusion criteria of the research, and include (but not be limited to) descriptions of age, gender, number of included subjects, ethnicity, level of functionality, and cultural background. Included in this section are definitions of terms used to group people that may be ambiguous or unclear, for example, if the paper includes role definitions.

Data Analysis

This section of the report should include the techniques used to analyse the data; a list, (though not exhaustive) of examples is provided below:

- Named software programs;
- Contextual analysis;

- Comparative analysis;
- Thematic analysis;
- Discourse analysis; and
- Content analysis.

Authors Conclusions

These are the conclusions reached by the study author and is often the data used for meta aggregation.

Reviewers Conclusions

These are the conclusions reached by the Reviewer.

Data extraction: Study findings

Qualitative research findings cannot be synthesised using quantitative techniques and although it is possible to mirror the systematic process used in quantitative reviews, reviewers need to exercise their judgement when extracting the findings of qualitative studies, particularly as the nature of a “finding” for practice is poorly understood. Reports of qualitative studies frequently present study findings in the form of themes, metaphors concepts? or categories. In Meta-Aggregation the units of extraction are specific findings (reported by the author(s) of the paper, often presented as themes, categories, concepts, or metaphors) and illustrations from the text that demonstrate the origins of the findings. A finding is therefore defined as a conclusion reached by the researcher(s) that is often presented as a theme or metaphor.

Once a reviewer has collected all the individual findings, with illustrations, the findings can be collated to form user-defined categories. To do this, the reviewer needs to read all of the findings and identify similarities that can then be used to create categories of one or more findings.

As the process relates to textual findings rather than numerical data, the need for methodological homogeneity – so important in the meta-analysis of the results of quantitative studies – is not a consideration. The meta-aggregation of findings of qualitative studies can legitimately aggregate findings from studies that have used radically different, competing and antagonistic methodological claims and assumptions, within a qualitative paradigm. Meta-aggregation does not distinguish between methodologies or theoretical standpoints and adopts a pluralist position that values viewing phenomena from different perspectives. Qualitative meta-aggregation evaluates and aggregates qualitative research findings on the basis of them being the result of rigorous research processes.

Study findings

The units of extraction in this process are specific findings *and* illustrations from the text that demonstrate the origins of the findings. Thus, a finding is defined as:

A conclusion reached by the researcher(s) and often presented as themes or metaphors.

Table 4. Selected findings from a paper by Bays (2001) included in a review on psychosocial spiritual experience of elderly individuals recovering from stroke (Lamb et al 2008)

Finding 1:	Hope is experienced as positive anticipation regarding recovery.
Finding 2:	Hope is related to active participation, moving the stroke survivor towards recovery.
Finding 3:	Individuals discuss hope in terms of anticipated future possibilities.

A *finding* is an interpretation of the primary researcher (*not the reviewer*) presented in the form of a statement, a theme or a metaphor.

To identify findings, reviewers need to read the paper through carefully, and to then read it closely and identify the findings and enter them into JBI-QARI. For example, in an aggregative review conducted on the psychosocial spiritual experience of elderly individuals recovering from stroke by Lamb et al (2008), the selected findings from an included paper (by Bays, 2001) on older adults' descriptions of hope after a stroke) in Table 4 were extracted from a paper included in the review.

For each of these findings, the reviewers then extracted illustrations from the paper (Table 5).

For each paper, every finding is extracted and the textual data that illustrates or supports the finding is also extracted and recorded in a data extraction sheet or an electronic system such as JBI-QARI. In other words, the reviewer searches the paper to locate the data - in the form of a direct quotation, an observation or a statement - that gave rise to the finding. This is an important step in data extraction as it requires the reviewer to establish the degree to which the finding authentically represents the data.

Note in Table 5 that the page number where the illustration is located is cited next to the illustration; and the symbol "(U)" next to the finding. This (U) refers to the credibility of the finding.

Table 5. Selected findings and illustrations from a paper by Bays (2001) included in a review on psychosocial spiritual experience of elderly individuals recovering from stroke (Lamb et al 2008)

Finding	Illustration
1. Hope is experienced as positive anticipation regarding recovery. (U)	... that tomorrow will be better than today. (page 23)
2. Hope is related to active participation, moving the stroke survivor towards recovery. (U)	You want to do what you can do so you get better. (page 23)
3. Individuals discuss hope in terms of anticipated future possibilities. (U)	I have come a long ways since I had the stroke... I got a long ways to go... (page 23)

Assigning a Level of Credibility to a finding

Assigning qualitative evidence a “level of evidence” rating does not - as in the case of quantitative evidence - relate to study design; but to the *credibility* of study findings in terms of the degree of their authenticity. Therefore, the credibility of every finding is assessed at the point of data extraction. The presentation of a finding and an illustration of its source below it on a data extraction sheet of the Findings Screen in JBI-QARI enables the reviewer to look at both and determine the degree to which the interpretation of the researcher is credible. One of three levels of credibility are assigned to each finding.

JBI Levels of Credibility- Qualitative Studies:

1. **Unequivocal (U)** - relates to evidence beyond reasonable doubt which may include findings that are matter of fact, directly reported/observed and not open to challenge
2. **Credible (C)** - those that are, albeit interpretations, plausible in light of data and theoretical framework. They can be logically inferred from the data. Because the findings are interpretive they can be challenged.
3. **Not Supported (NS)** - when 1 nor 2 apply and when most notably findings are not supported by the data

Thus, the reviewer is required to determine if, when comparing the data (illustration from the text) with the finding (statement, theme, metaphor) the finding represents evidence that is: Unequivocal, Credible or Not Supported. These three levels of credibility are later referred to when assessing the level of evidence to be ascribed to the synthesis.

Conclusion

Through careful collation of the findings from individual studies and assigning one of the three levels of credibility the review author is building a ‘trail’ of supportive data for the final synthesis. Without this trail of data the review authors cannot assign a level of evidence to the aggregated synthesis. This level of evidence is essential to inform future readers of how the findings of the review can be used to change and/or inform practice/policy etc. A level 3 credibility: Not Supported is as critical a finding as is a level 1: Unequivocal. This level of credibility informs the reader as to the quality of existing evidence related to the phenomena in question.

Chapter 8:

Data synthesis

Where meta-aggregation is possible, qualitative research findings are synthesised to generate a set of statements that represent that aggregation, through assembling the findings rated according to their credibility, and categorising these findings on the basis of similarity in meaning. These categories are then subjected to a meta-synthesis in order to produce a single comprehensive set of synthesised findings that can be used as a basis for evidence-based practice (Figure 6).

Where textual pooling is not possible the findings can be presented in narrative form.

Prior to carrying out data synthesis, reviewers need to establish, and then document:

- their own rules for setting up categories;
- how to assign findings to categories; and
- how to aggregate categories into synthesised findings.

The aggregative approach to synthesising the findings of qualitative studies requires reviewers to consider the validity of each study report as a source of guidance for practice; identify and extract the findings from papers that meet the protocol's inclusion criteria; and to aggregate these findings as synthesised findings.

Findings as explicitly stated in the paper are extracted and textual data that illustrates or supports the findings are also extracted and inserted with a page reference. Many qualitative reports only develop themes and do not report findings explicitly. In such cases, the reviewer/s may need to develop a finding statement from the text.

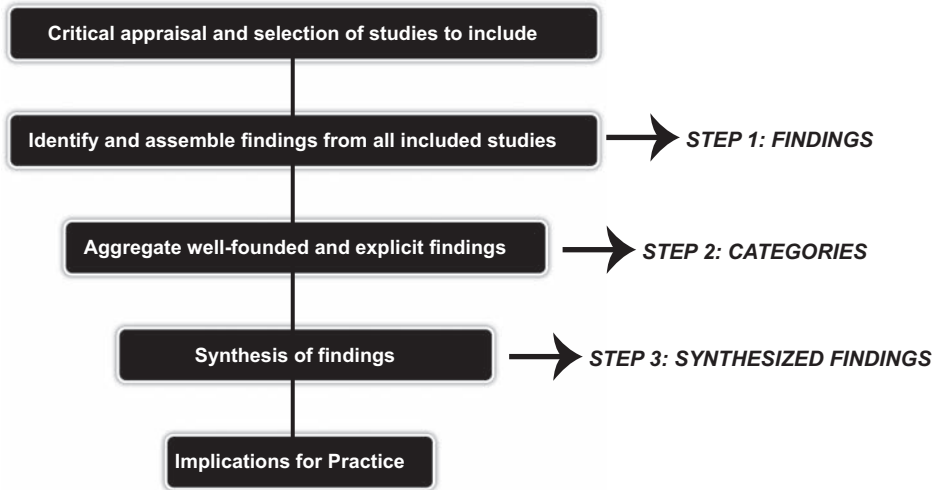
When all findings and illustrative data have been identified, the reviewer needs to read all of the findings and identify similarities that can then be used to create categories of more than one finding.

Categorization is the first step in aggregating study findings and moves from a focus on individual studies to consideration of all findings for all studies included in the review. Categorization is in essence a collation of themes. The review authors group individual themes based on similarity in meaning. Once categories have been established, they are read and re-read in light of the findings, their illustrations and in discussion between reviewers to establish synthesised findings. This process can be carried out manually or through the use of the JBI-QARI software, which sorts the data into a meta-synthesis table or "QARI-View", when allocation of categories to synthesised findings (a set of statements that adequately represent the data) is completed. These statements become the evidence to inform practice/policy, etc.

Executing an aggregative meta-synthesis

The aggregative approach to meta-synthesis requires reviewers to identify and extract the findings from papers included in the review; to categorize these study findings; and

Figure 6: The Steps in Meta-Aggregation



to aggregate these categories to develop synthesized findings. *It is important to note here that aggregation does not involve a reconsideration and analysis of the data in papers reviewed as if they were primary data; it focuses only on the combination of study findings.*

The most complex process in synthesizing textual data is technique. The review authors need to agree on the most effective method of comparing the findings of each study and categorize and re-categorize the findings towards developing *synthesized findings*.

Data Synthesis involves the following three-step approach:

- Step 1: Identifying findings
- Step 2: Grouping findings into categories; and
- Step 3: Grouping categories into synthesized findings

In order to pursue this, reviewers, before carrying out data synthesis, need to establish their own rules on:

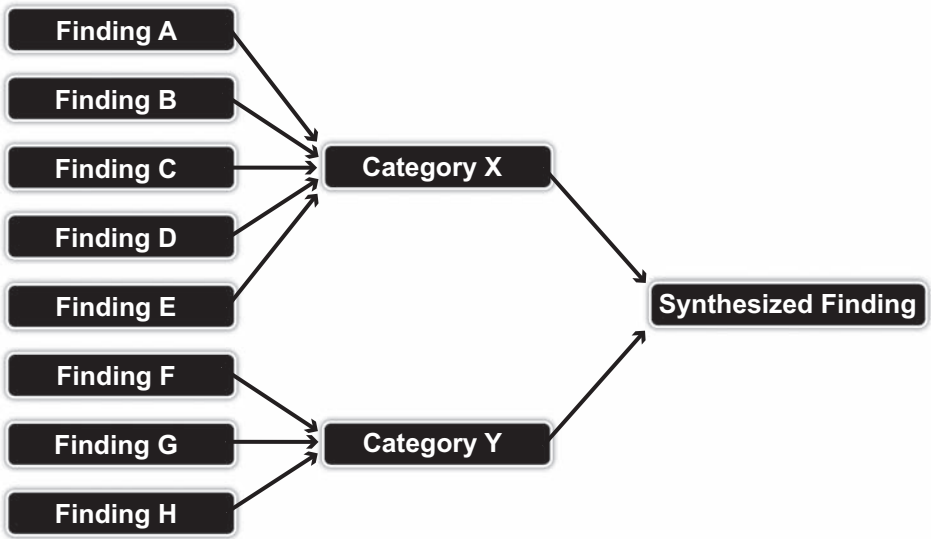
- how to assign findings to categories; and
- how to aggregate categories into synthesized findings.

Reviewers need to document these decisions and their rationale in the systematic review report.

Thus, a reviewer may identify 32 findings from 15 phenomenological studies included in the review; 41 findings from 7 ethnographic studies included in the review; and 38 findings from 11 discourse analyses - a total of 111 findings from 33 included studies.

In step two, where the findings are categorized on the basis of similarity in meaning, the 111 findings from the 33 studies are aggregated to generate a smaller number of categories. In

Figure 7: Charting the Relationship between Findings, Categories and Synthesised Finding



step 3 the categories are synthesized to generate either a single synthesized finding or a small number of them. The end result forms a chart that identifies the relationship between the findings, categories and the synthesized finding(s), as in Figure 7.

The JBI-QARI program automatically plots this chart (Figure 8).

In the Lamb et al (2008) review used as an example in Chapter 7 the meta-aggregation of studies included in the review generated four synthesised findings. These synthesised findings were derived from 165 study findings that were subsequently aggregated into 20 categories (Figure 9).

Figure 8: JBI-QARI Charting the Relationship between Findings, Categories and Synthesised Finding

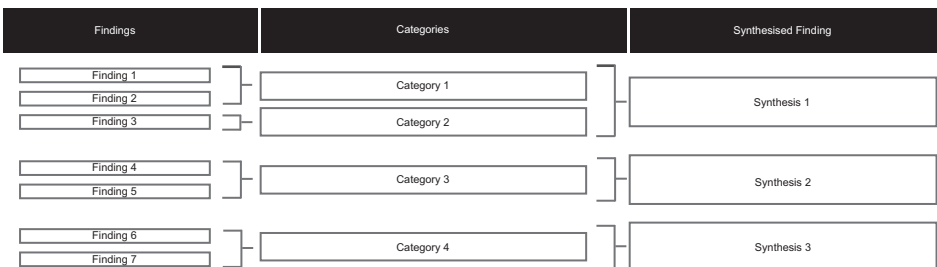
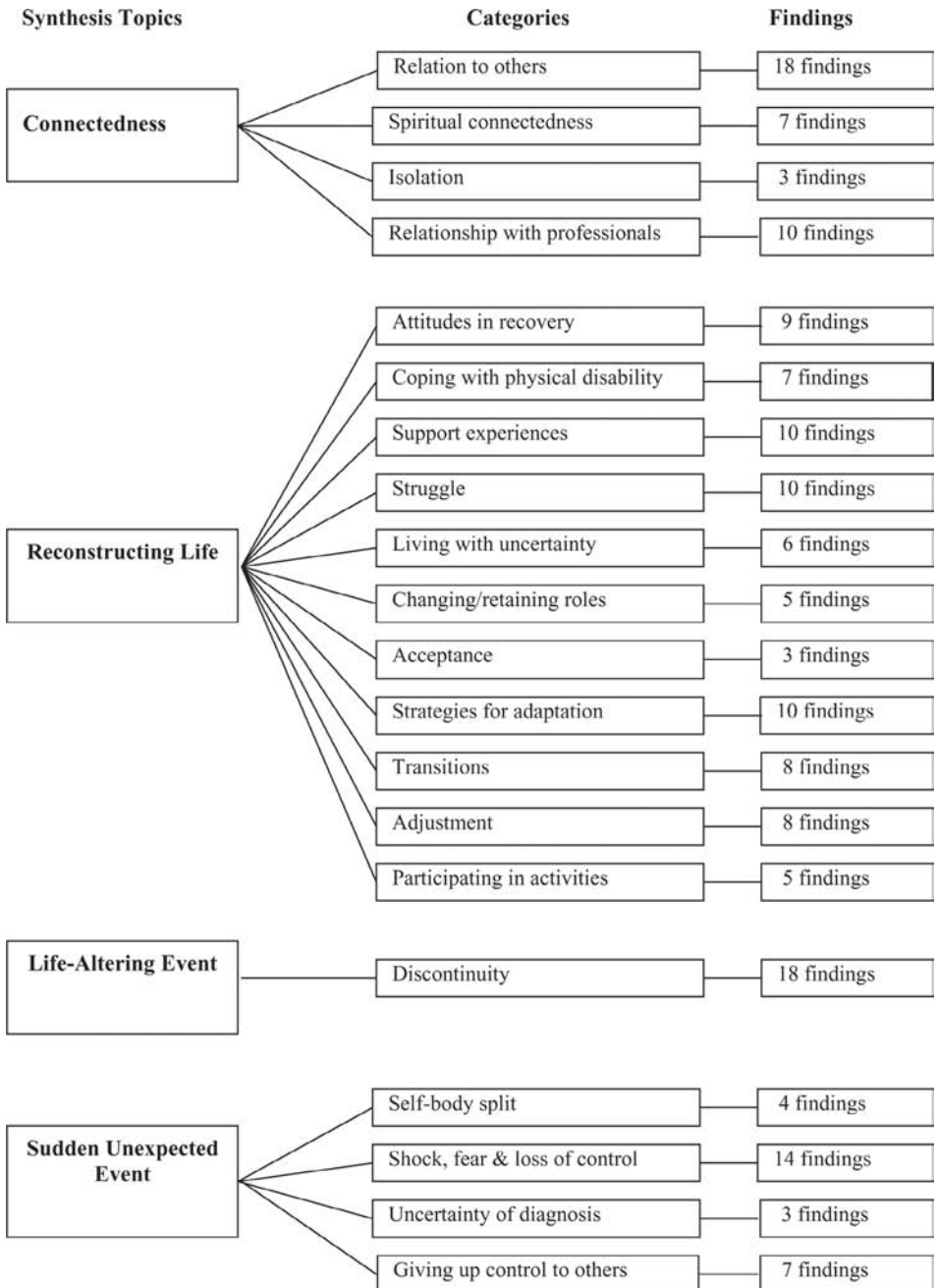


Figure 9: Meta-Aggregation of Studies in the Lamb et al (2008) Review of the Psychosocial Spiritual Experience of Elderly Individuals Recovering from Stroke



Conclusion

Like their colleagues completing meta analysis of RCT's, review authors completing a meta aggregation of qualitative data must walk a fine balance of review versus research. An easy, but misguided path to follow is one of reanalysing the data from original studies. Instead, meta aggregation is a 'grouping' (as opposed to 'pooling' in meta analysis) of findings from a variety of different studies. The review authors then determine if these categories can be 'collapsed' into a statement that represents their collective meaning. Synthesis does not begin until all study findings have been assessed as to their credibility and then categorised.

Given the large volume of text that reviewers conducting a meta aggregation need to manage, software packages like JBI QUARI are an essential tool to have. The JBI QUARI chart feature provides a graphic representation of the meta aggregation process. This chart helps to demonstrate to the reader how the meta aggregation does not change the findings of the individual studies but rather achieves a synthesis of their collective meaning through preserving the integrity of each individual study's findings.

Chapter 9:

Developing a systematic review report

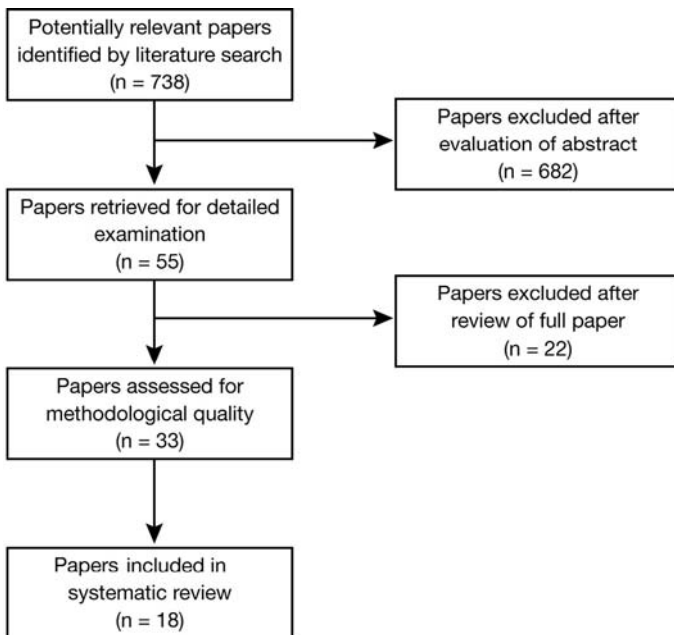
A systematic review report is the final outcome of a review that utilises Meta-Aggregation. To a large extent, the components of the systematic review report will mirror the content of the original protocol. As with the protocol, there should be a comprehensive background that justifies conducting the review, a description of the objectives of the review, an account of the criteria that were used for considering studies for the review, the search strategy used and methods utilised for critical appraisal, extraction and synthesis of data.

The review of results includes both a flow chart describing the search, selection and inclusion process (Figure 10) and a description of the studies that includes the type and number of papers identified. The number of papers included and excluded with brief explanation for exclusion are stated.

The report also provides a summary of the overall quality of the literature identified. The results section must be organised in a meaningful way based on the objectives of the review and the criteria for considering studies. Particular consideration should be given to the types of interventions and outcomes.

The discussion must include an overview of the results and a discussion about any limitations and issues arising from the results of the review. The conclusions focus on the implications for

Figure 10: A Flowchart of Search Results



practice and for research. These should be detailed and must be based on the documented results, not author opinion. Where evidence is of a sufficient level, appropriate recommendations are also made. Recommendations must be clear, concise and unambiguous.

Assigning levels of evidence to recommendations

The recommendations drawn from the results of aggregative reviews are each assigned a level of evidence (See Table 6) based on the nature of the research used to inform the development of the recommendation.

As Table 6 shows, levels of evidence derived from aggregative reviews relate to the credibility of the findings that lead to a recommendation. Recommendations based on evidence where all of the findings it is derived from are “unequivocal” are ranked as “Level 1” evidence; and where the findings are all at least “credible”, as “Level 2” evidence. Reviewers are expected to, when drafting recommendations for practice, include a level of evidence congruent with the research design that led to the recommendation.

Appendices

Again, as in the initial protocol, the final review report should include references and appendices. The references should be appropriate in content and volume and include background references and studies from the initial search. The appendices should include:

- Critical appraisal form(s)
- Data extraction form(s)
- Table of included studies
- Table of excluded studies with justification for exclusion

These checklists should reflect the types of studies, settings, participants, interventions, and outcomes for the review question posed. If systematic review reports are of a high enough standard they may be utilised as evidence upon which to base clinical practice guidelines.

Conflict of interest

A statement should be included in every review protocol that either declares the absence of any conflict of interest or describes a specified or potential conflict of interest.

Implications for practice

Implications for practice should be detailed and based on the documented results, not reviewer opinion. In qualitative reviews, recommendations are declamatory statements that are steeped in context. Therefore, generalizability occurs between cases rather than across broad populations. Recommendations must be clear, concise and unambiguous.

Implications for research

All implications for research must be derived from the results of the review, based on identified gaps in the literature or on areas of weakness, such as methodological weaknesses. Implications for research should avoid generalized statements calling for further research. Instead

Table 6. Levels of evidence associated with aggregative, qualitative reviews

Level of Evidence	Feasibility F (1-4)	Appropriateness A (1-4)	Meaningfulness M (1-4)	Effectiveness E (1-4)
1	Metasynthesis of research with unequivocal synthesized findings	Metasynthesis of research with unequivocal synthesized findings	Metasynthesis of research with unequivocal synthesized findings	Meta-analysis (with homogeneity) of experimental studies (e.g. RCT with concealed randomization) OR One or more large experimental studies with narrow confidence intervals
2	Metasynthesis of research with credible synthesized findings	Metasynthesis of research with credible synthesized findings	Metasynthesis of research with credible synthesized findings	One or more smaller RCTs with wider confidence intervals OR Quasi-experimental studies (without randomization)
3	a. Metasynthesis of text/opinion with credible synthesized findings b. One or more single research studies of high quality	a. Metasynthesis of text/opinion with credible synthesized findings b. One or more single research studies of high quality	a. Metasynthesis of text/opinion with credible synthesized findings b. One or more single research studies of high quality	a. Cohort studies (with control group) b. Case-controlled c. Observational studies (without control group)
4	Expert opinion	Expert opinion	Expert opinion	Expert opinion, or physiology bench research, or consensus

a clear description of the current quality of existing research and how this can be improved is valuable information for future researchers in this area.

Discussion and Conclusions

Evidence based healthcare is dominated by the evidence generated from the systematic review and meta analysis of the data generated from quantitative research. The evidence

gained from the systematic review of qualitative research can equally inform healthcare policy by building a better understanding of how and why individuals and communities perceive health, manage their own health and make decisions related to health service usage. This text examined the methodological bases to qualitative systematic reviews and described the processes involved in the conduct of a rigorous synthesis of qualitative evidence, with a particular focus on Meta-Aggregation. A detailed description of the 5 stages required to conduct a systematic review of qualitative data have been provided:

1. *Question development*
2. *Searching for Qualitative Evidence*
3. *Selecting and critically appraising studies*
4. *Data Extraction*
5. *Data synthesis*

Particular attention was paid to reinforcing an appreciation that the synthesis of qualitative evidence is the analysis or interpretation of secondary or processed data. Because the study findings are qualitative, the secondary analysis of these study findings is essentially an interpretive process. The purpose of such a synthesis is to integrate results from a number of different but inter-related qualitative studies and not to re-analyse or re-interpret the original data.

A three-stepped approach to searching the relevant subject matter databases was recommended. Reviewers are encouraged to work with a library specialist to help develop a comprehensive search strategy inclusive of the Grey literature. Often time a concept map is a constructive approach to refining the key words to be used in the search strategies. Recommendation were provided about how to critically appraise the strengths and weaknesses of identified studies towards ensuring that only high quality qualitative evidence is included in the meta-synthesis.

Where meta-aggregation is possible, qualitative research findings are synthesised to generate a set of statements that represent that aggregation, through assembling the findings rated according to their credibility, and categorising these findings on the basis of similarity in meaning. These categories are then subjected to a meta-synthesis in order to produce a single comprehensive set of synthesised findings that can be used as a basis for evidence-based practice.

Through careful attention paid to the 5 steps outlined the review authors/team can produce a final report that provides the reader with a comprehensive analysis of the current state of evidence related to the phenomena in question. Then commences the next important step in the journey towards Evidence Based Healthcare: translating the evidence into practice!

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