Introduction to the *Handbook of Theory and Methods in Applied Health Research*

Sarah G. Brearley and Catherine Walshe

Most health researchers start out with the kernel of a research idea or a topic of interest, usually followed by some serious thinking about how to go about researching it. This practical solution-finding, how-do-I-do-this human tendency can lead many of us to focus on the technical methods of undertaking the research (which is also the main focus of this *Handbook*). However, in doing so, it is easy to omit a vital element of research design, which is, identifying the paradigm in which the research is located.

All researchers are guided by principles which relate to how they see reality (what is the nature of reality or what is known), known as ontology, and their own relationship to what is known, its possibility and its scope (what types of knowledge are possible and how to ensure they are legitimate), known as epistemology (Hamlyn 1984; Crotty 1998; Collis and Hussey 2014). Identifying how knowledge is perceived (ontology) and the relationship between the ‘inquirer’ (Denzin and Lincoln 2011, p. 12) (that is, the researcher) and what is known (epistemology) enables the researcher to ascertain how the world is or can be known, that is, the practices to be used, known as methodology.

The three elements of ontology, epistemology and methodology coalesce together in a paradigm. A paradigm is a framework consisting of beliefs, assumptions and propositions which stem from what is known, the relationship between the researcher and that knowledge, and how the knowledge can be accessed, which orientate thinking and guide how the research should be conducted (Guba 1990). For researchers, identifying and examining the paradigm in which they and the research is located is important to avoid conducting research that rests on unrecognized assumptions (Mertens 2014).

KEY TERMS

Ontology	What is known; the nature of reality.
Epistemology	The relationship of the researcher to that which is being researched (Collis and Hussey 2014).
Paradigm	‘[A] basic belief system or worldview that guides the investigator’(Guba and Lincoln 1994, p.105).
Methodology	Overall approach to gaining knowledge which takes account of the nature of reality and how the world is known by the researcher.
Methods	The systematic procedures a researcher adopts to produce data.

Paradigms provide the research community with model solutions (with those that are more successful tending to gain status) (Kuhn 2012). However, revolutionary new knowledge can challenge ontological and epistemological positions, and thus the paradigm itself, such

as the Copernican revolution which challenged the previously accepted Ptolemaic model of the universe (with the Earth stationary at the centre) and proposed a radical heliocentric model.

For researchers, the first paradigm shift of particular note was from speculative and intuitive metaphysics to the scientific method of seventeenth-century English philosopher Francis Bacon (Agassi 1975; Mackenzie and Knipe 2006). In this paradigm, knowledge is viewed with doubt and requires an experimental approach of repeated observation and measurement. Auguste Comte (1798–1857) drew on this scientific method as a means of understanding human behaviour in his positive philosophy, which became the dominant paradigm of positivism (Corry et al. 2019).

Positivists assert that the social world is able to be studied in the same way as the natural world using an approach that is value-free and provides a causal relationship (Mertens 2014). Ontologically they see a real reality, which can be apprehended if the researcher and the object being studied are separate and neither influences nor is influenced by each other (epistemology) with experimental methods measuring and testing questions and hypotheses (methodology) to produce true findings (Guba 1990).

For research focused on human behaviour (which most research with humans – that is, social research – does) the centrality of observation in positivism presents a problem, given the non-observable nature of thoughts, feeling, beliefs etc. (Mertens 2014). This gave rise to post-positivism, with its critical realist ontology which accepts there is an imperfectly real reality which can only be probabilistically apprehended, and aims for objectivity while acknowledging the influence of other knowledge (epistemology) (Guba 1990). Modified experimental methods tend to dominate (methodology) and lead to findings that are probably true (Mertens 2014).

In contrast to positivism, constructivists assert the importance of understanding people's experiences of the world and assume that knowledge is socially constructed. As a paradigm it grew out of work by Edmund Husserl (1859–1938) and Wilhelm Dilthey (1833–1911) (Mackenzie and Knipe 2006). Ontologically, constructivism is located in relativism, whereby realities are accessible as multiple constructions, and the inquirer and inquired-into create findings during the research process (epistemology) using techniques which distil an informed construction (methodology) (Guba 1990).

There are many excellent sources that explain these paradigms in more detail, offer other names for these paradigms (confusing, but focus on the ontology, epistemology and methodology), and describe a much wider panoply of paradigms (see the reference list as a starting point). The key point is that the ontological, epistemological and methodological dimensions of the paradigm with which the researcher aligns exerts an important influence on how the research is undertaken and how data are collected. Understanding these dimensions enable the researcher to engage with the choices of methods and skills available, and select the approaches that best enable them to access the knowledge they are interested in.

THE *HANDBOOK*

We hope this *Handbook* will provide an invaluable, practical, research resource. It is aimed at those conducting applied health research, probably at doctoral or post-doctoral

level, but designed to have utility more broadly. It is structured into four parts examining research skills, qualitative and quantitative research methods, and contemporary research issues. Each chapter provides an overview of the key debates that relate to relevant contemporary issues, drawing from evidence in a practical way to guide researchers and indicating further sources of information. You can dip into and out of the book, but it is also organized so that it should read logically if you start at the beginning and work your way through. It is not intended to be a comprehensive reference work, but a working guide to the most common methods and choices that face you as an applied health researcher. We hope you find it helpful.

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