# Chapter 2
# Research Methodologies Related to Pharmacy Practice: An Overview

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**Abstract** This chapter considers the research methodologies presented throughout the book in relation to their philosophical basis. Qualitative research is related to the interpretative perspective, and quantitative research to the empirical perspective. Thus, the *right* or *wrong* way of 'doing research' depends on the standpoint of the individuals conducting or judging the work. Viewed in this way, the very definition of pharmacy practice research can be brought into question, and the reader is nudged to think about their own acceptance of what is and what is not likely to lead to meaningful data within the context of the book's chapters.

The next chapter on the evidence and impact of pharmacy practice research paints a landscape nestled in the scientific paradigm, which by its very virtue asserts and values work that meets the positivist truth-seeking approach to knowledge creation and, less so, work that takes a more open-ended, interpretative approach. Interpretative researchers, those who view 'science' more as an ideology (one of many ideologies) than a singular truth, would argue that meaning is not necessarily to be derived from clear, testable outcomes of empirical research. Instead, to interpretative researchers, meaning can be just as validly derived from studying people and social structures in open systems to explore interactions and subjectivities. Although it can be a false dichotomy to divide researchers into empiricist (quantitative) versus interpretative (qualitative) investigators, it is important to highlight these vastly different philosophies that can underpin pharmacy practice research—if for no other reason than to demonstrate the relative validity and value of each. Pharmacy practice research and its methodologies are 'situated knowledge'. There is no inherently 'truthful' way of conducting research, but what is deemed acceptable, and by whom, depends on the temporal and spatial continuum along which research is being conducted, as well as the prevailing norms and expectations.

In this chapter, I provide an overview of research methodologies used in pharmacy practice research, detailed throughout this book, not as duplication of this material but by way of positioning the chapters within different research paradigms. It is important to articulate early on that pharmacy practice researchers

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do not in the main choose their research methods to suit the circumstances, but rather they conduct research based on their beliefs about what does and what does not constitute valid research. Of course, it is likely that researchers will have also developed expertise in their preferred methodology, and so to them, the right way of reflecting the reality of the 'researched' will be a result of their expertise as well as beliefs and perceived norms. Beliefs about what represents appropriate research are routed in different philosophical perspectives about how we create knowledge and, in effect, *how we know what we know*. Different epistemologies (theories about knowledge) dictate what should count as knowledge, the validity of knowledge, what distinguishes belief from knowledge, the kinds of things that are to be known, and indeed whether anything can be known for certain (Donyai 2012). Epistemology thus drives research methodology and ultimately results in the type of data generated through research.

In pharmacy practice research, those who subscribe to the empiricist tradition believe that science can (and should) provide an objective, value-free picture of the world—through the notion that people and social structures can be studied 'scientifically' within closed systems of research—that somehow, akin to laboratory research, a limited number of variables relating to people can be identified, their behaviour and interrelationship observed, while accounting for or avoiding interference from external (confounding) variables, to generate causal laws. In this way, scientific 'truth' can emerge through empirical evidence. If the 'truth' *ascertained* in this way returns unexpected results, empiricists may defend the findings by highlighting the superiority of the scientific method or contest them by identifying methodological deviations in the work conducted that invalidated the resulting 'truth'. However, people and social structures are too complex, according to interpretivists, for study in simple closed systems. This is because social objects, with their intrinsic properties and inherent complexities, can interfere with the assumptions made by empiricist researchers in countless ways, so that outcomes cannot ever be predicted and ascertained with any degree of certainty. Ideas about what it means to be human (ontology) are closely linked with epistemology and methodological approaches. Interpretivist researchers, not accepting reductionist ideas, stress the importance of language and communication in creating knowledge and thus explore and examine people's thoughts and experiences in detail for their qualitative meanings without the need for creating value-free, generalisable knowledge.

One of the 'interesting' consequences of the existence of different philosophical and methodological standpoints within pharmacy practice research is the resulting interplay of power and control in relation to what is deemed acceptable research and what is not by the dominant research community. This 'power play' has many effects—which research should be funded, published, applauded, taught, and taken up by policy makers? These outcomes depend clearly on the arbiters of such decisions. But to what extent are the decision-makers (publishers, peer reviewers, funders, academics) influenced by their own philosophical perspectives and what do they stand to gain from sanctioning research of one type and not another? If we define pharmacy practice research, as in the previous chapter (evidence and

impact), as having a focus on 'exploring how and why people access pharmacy services, the costs of pharmacy services, and the outcomes for patients as a result of these services, and comparison of these costs and outcomes compared to the same or similar services delivered by other providers' (a 'hard' definition), then we stand potentially to invalidate or exclude certain other types of research that do not set out to measure and make comparisons through empirical research.

The chapter on qualitative methods provides a much broader definition of pharmacy practice research including the identification, improvement, and development of pharmacy practice, 'for example to explore various types of existing practices and beliefs in order to understand attitudes, values, and perspectives underlying these practices'. Thus, the emphasis here is not on hard outcome measures and a study of research variables but on much broader questions relating to human beliefs and interpretations. Research that uses qualitative methods captures the subjective nature of phenomena for assigned meanings and explanations, often through the analysis of language. Thus, the mechanism of qualitative research enables the researchers to relate with the field of study to uncover how the people being studied are creating, and being created by, their understanding of the world. An important element of qualitative research is that it need not follow distinct, predetermined stages, but can allow researchers instead to move back and forth between research questions, collecting and analysing data in an iterative process. As well as creating an understanding of people's inner experiences, researchers who study subjectivities and meanings can compare their results between different groups of people. Qualitative research involves a range of data-collection methods and approaches to data analysis. The chapter authors describe interviews, observations, documentary analysis, and the use of online communities ('netnography') as research methods, providing recommendations for the conduct and analyses of data generated through each technique. Importantly, the authors discuss validity, reliability, and transferability in qualitative studies.

Returning to the hard definition of pharmacy practice research, the chapter on action research is a good example of a pharmacy practice methodology, which by its very nature also cannot set out to measure and make comparisons with the same or similar services elsewhere (and therefore lacks generalisability). Instead, action research focusses on transformatory action at a local level and a recording of the outcomes of these changes as well as accompanying learning. As the chapter authors acknowledge, action research has local significance which cannot (and should not) be generalisable, but this does not invalidate such research. After all, instead of a scientifically valid experiment which is potentially unworkable in wider real-life settings, action research actually involves the development of everyday practices with potential for direct impact on patients involved. In the UK at least, propelled by the language of the 'research excellence framework', which assesses the quality of research within universities, 'impact' from research is a contemporary buzzword, and certainly action research viewed in this way delivers on this measure of quality. In addition, the chapter authors highlight a number of quality criteria that can guide researchers to demonstrate the validity of the processes followed within their own action research. As well as numerous examples of different action

research projects, the authors provide a list of recommendations for conducting action research in pharmacy practice. As a methodology, action research certainly has value in engaging researchers with practitioners to collectively bring about practicable, transformative changes for improving patient care.

The situation is different with quantitative methods, seated in the empirical paradigm, where the primary aims are to establish general laws or statements that apply across different participants at different times. With quantitative methods, the entire mechanism of research including the study design, the nature of the data and the manner in which they are to be collected all should lend themselves to objectivity. The researchers collect the data in an impartial manner to exclude their own and others' personal values and biases. They establish the research hypothesis at the outset of the study and maintain consistency in data collection, for example, through the use of standardised instruments. The aim is to produce generalisable data, 'universal truths', where such studies can be repeated with another sample at a different time to produce similar results. The chapter on quantitative methods thus outlines firstly a variety of data-gathering methods in pharmacy practice research, which includes the collection of existing data and direct observation, as well as self-reports. Sources of bias are then identified as response bias (e.g. from self-reports to overt observation) as well as low response rates. Finally, the authors examine future trends through a discussion of reliability measures, implicit measures, and statistical norms. The concluding comments are apt, highlighting the importance of understanding what the data are being collected for, and what the limits are.

This recognition of the limitations of quantitative measures has resulted in the advent of mixed-methods research, which is another appropriate chapter in this book. This type of methodology uses a mix of empirical and interpretivist approaches within the same study or research programme to create contextual understanding as well as to validate the findings. The chapter authors discuss the advantages of mixed-methods research through the use of examples that demonstrate the added meanings gained through qualitative research, which are otherwise absent from quantitative measurements. The disadvantages of this type of research rests with the added burden of work created through the use of additional methods. The authors use the example of the UK's Medical Research Council's (MRC) guidance on the development of complex interventions to validate the place of mixed methods within pharmacy practice research. There is also a focus on outlining the typology of mixed-methods research in some detail, as well as a case study example detailing the application of a protocol for triangulation (for validating, enriching, and completing the knowledge gained). Mixed-methods research presents an interesting idea to interpretative researchers because it demonstrates an acknowledgement (by empiricists) that the quality and nature of experiences must also be a part of research in order to produce valid and meaningful data.

This is interesting, because the chapter on organisational theories and pharmacy practice research in fact begins with a clear acknowledgement that the positivist, empiricist 'stronghold' on pharmacy practice research can hinder the subjective,

interpretative approach. The focus of this chapter is on management science as it applies to pharmacy practice research. The framework used examines micro-, meso-, and macro-level theories in relation to organisational research. The micro-level theories focus on individuals within their organisation, the meso-level theories focus on individual organisations, and the macro-level theories encompass larger communities such as 'community pharmacy organisations'. Yet the chapter has a wider reach than is portrayed by its title of organisational research. This is because there is also a very useful consideration of the empiricist ('positivist/objectivist/functionalist') versus the interpretative ('interpretative/subjectivist/naturalistic') perspectives with a detailed focus on ontology and epistemology, referred to earlier in the current chapter. There is also a focus on developing and testing theory, again with sufficient detail to be a very useful reference for those newer to research as well as experienced researchers from other fields. The chapter concludes with a consideration of rigour and how it might be ensured within organisational research.

The same author then focusses the next chapter on explaining the application of concept mapping and pattern matching techniques to pharmacy practice research. A methodology related to organisational research, this is again another accessible chapter that is of interest to both novice and experienced researchers. The idea of concept mapping is described as 'any process which helps to represent ideas as pictures or maps'. The chapter author sets out to explain the relevance of this methodology to community pharmacy research, specifically organisational culture and effectiveness. It is argued that concept mapping is helpful for 'structured thought about complex issues and action required to remediate these'. The technique is describes as a mixed method, using interpretative as well as statistical (quantitative) methods. This is because in addition to concept mapping, the author talks about pattern matching, which allows comparison of rating scales. There is a helpful step-by-step guide to concept mapping and also pattern matching, as well as two specific examples. The chapter ends with a brief consideration of the limitations as well as future applications. It serves as a useful entry-level explanation of this subject and provides ample references for those interested to pursue further reading and perhaps even make an attempt at applying the method.

The chapter on pharmacoeconomics and pharmacy practice research is strictly positioned in the empiricist paradigm, relying on hard-science analysis of health economics to enable comparison of pharmaceutical agents/services/programmes with one another. A number of pharmacoeconomic analyses are outlined. Where health resources are scarce and pharmaceutical expenditure has to be controlled, pharmacoeconomic evaluations are meant to enable prioritisation of spending through objective means. The authors rightly highlight that apart from cost-effectiveness studies involving medicines, it is rare to see pharmacoeconomic analyses as a part of pharmacy practice papers. Perhaps this is avoided because of a bias on the part of researchers, whose starting position is that pharmacy services are justified. According to the authors, the main area where pharmacoeconomic evaluations have been conducted relates to pharmacist interventions and some disease management activities. The chapter also provides some guidance for designing pharmacoeconomic analysis in pharmacy practice research. Sufficient

examples and material are referenced to enable readers to look elsewhere for the additional detail needed to start a pharmacoeconomic analysis by one's self.

So what can someone unacquainted with pharmacy practice research methods conclude from reading this interesting set of chapters that make up the current book? Certainly, this is a field that is developing and growing as research ideas from other disciplines diffuse in and morph pharmacy practice research into a larger, more all-encompassing approach. While certain elements of the discipline are gaining credibility, there is still the power play that means one method is promoted and considered more credible than another. Apart from that, the authors of the last chapter consider drivers for change to include population demographics; technology; pharmacy as institution and as profession; consumer expectations; and finally new research capabilities. In the latter section of this chapter, the authors consider areas of focus for the future, working collaboratively, and moving towards large-scale initiatives. The authors highlight the demarcation between pharmacy practice research and other related fields—even inviting other fields to join the family of practice research. There is also the issue of capacity-building and making sure that we are training future generations of pharmacy practice researchers. Certainly this book is a step in the right direction in terms of defining the breadth of pharmacy practice research and providing some very useful descriptions, examples, and references for the reader.

## Reference

Donyai P (2012) Social and cognitive pharmacy: theory and case studies. Pharmaceutical Press, London