PRACTICE-BASED RESEARCH IN (ALLIED) HEALTHCARE

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Practice-based research in (allied) healthcare

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You can use the online study materials that go with this book. This material consists of, among other things, knowledge clips, interviews, examples of different types of studies and assignments for the assessment of research literature.

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Foreword

The health and social care sector is undergoing a transition whereby there is a growing emphasis on how people function in their everyday lives. Given that allied health sciences are focused specifically on people's functioning in their daily environment, the importance of this field is growing as a result of this transition. Research can contribute to the further development of this type of care. Just like other medical and nursing caregivers, it is therefore important to properly train allied health science staff in the use of research methods. This book contributes much to that effort.

Its authors opt for a practice-based approach: how can research be used to further develop and improve the field of allied health sciences in practice? They demonstrate how research can help answer the questions that caregivers face in their everyday practice. They also offer a thorough description of what research is and how it should be conducted. The book covers both the classical quantitative and qualitative research methods and other forms of research, such as participatory action research and design-based research. More and more often, patients' complex healthcare issues call for a multidisciplinary approach. This book helps base that approach on a solid foundation of multidisciplinary research.

The book has been written for people who only want to read about research, for those who want to conduct research themselves and for those who want to distribute and implement the results of research. It contains valuable and useful information for each of these demographics. The book is as practical as it is thorough: it contains myriad concrete tips and guidelines on how to conduct research.

Throughout one's entire study and long after, this book will serve as a source of suggestions and ideas on how to critically assess, set up or distribute research and research results. Lastly, it is an inspirational book to page through.

In other words, this book has many different ambitions. After reading it, I was pleasantly surprised to find that it realises each of these ambitions to the fullest. It will make a valuable contribution to practice-based research in the field of allied health sciences and therefore to the manner in which people function in their daily environment.

Prof Dr Joost Dekker
Professor of Allied Health Care, Amsterdam University Medical Centres

Preface

Our goal for this book is to offer students in the field of healthcare a guideline that will help them to enthusiastically take part in research and continue to develop their research skills throughout their entire lives.

Although we continue to focus largely on students of allied health sciences, this book (i.e. the third revised edition in Dutch) has been expanded with examples and designs from a broader field of care. In addition to the known quantitative and qualitative research designs, we have added two new chapters written by specialists that focus on participatory action research (Chapter 8) and design research (Chapter 9). Chapter 8 was written by Mieke Cardol, Marieke Groot and Karin Neijenhuis (Rotterdam University of Applied Sciences), while Chapter 9 was written by Job van 't Veer (NHL Stenden University of Applied Sciences). The other chapters of this book have also been extensively revised and expanded where necessary.

More so than with previous editions, we hope to serve the field with research that contributes to substantiated innovation and improvement.

Eindhoven/Utrecht, spring 2021

Eveline Wouters, Yvonne van Zaalen and Janna Bruijning

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Introduction

Although many students do not go on to become researchers after graduating, they will face issues in their daily professional practice that will require answers in the short or long term. Finding these answers calls for research. This research contributes to the development of the professional practice. However, research skills cannot simply be acquired by completing a "Research methods" module during your studies; they must be developed. All development takes time.

Practice-based research in (allied) healthcare serves as a guideline throughout your entire study. As a student, this book will gradually introduce you to the building blocks you need to conduct your own research. It will also teach you to appreciate and critically assess existing research. This ensures that research becomes a part of your daily practice and of your studies and it paves the way for future improvements to the field of practice. It deepens and adds nuance to the choices you make in practice. Asking questions, being critical and utilising evidence-based methods together with people from other fields of expertise. This also means knowledge of more and different research designs.

All chapters follow the student over the course of their journey through the world of research: from a passive and critical reader to an active performer of research and a translator of research results into practice. Part IV of this book is specially dedicated to this so-called impact. This completes the circle: on the one hand, the research is inspired by practical needs; on the other hand, guidelines are offered to ensure the field of practice benefits optimally from the results of the research. We have tailored the structure of the book accordingly to ensure it serves as both a student's journey and a true innovation cycle.

The structure of this book

This book intends to guide you as a student in the field of healthcare from the start of your studies to your eventual role as a practitioner with well-developed research skills and the means to change their care practice for the better. The book is divided into four parts. In part I, we cover the "why" of research in (allied) healthcare and the value of evidence-based practice (Chapter 1), the ethics of research (Chapter 2) and the ability to critically read research literature (Chapter 3). In part II, we explore the process of preparing your own

research: how to translate a practical problem into a good research question (Chapter 4) and how to write a project plan (Chapter 5).

In part III, we then delve deeper into how students conduct research: we take a step-by-step look at the practical issues you may encounter, up to and including analysing and presenting the results. Chapter 6 covers quantitative designs, Chapter 7 is about qualitative research, Chapter 8 is about participatory action research, Chapter 9 covers design research and Chapter 10 covers literature reviews. In every chapter of part III, we consider what a student needs to conduct their own practical research; where relevant, we refer to in-depth literature. Finally, Chapter 11 (part IV) focuses on the practical impact of research: what does impact mean and what presentation forms and methods are there that contribute to the impact of research?

Online study materials

You can find the online study materials that go with this book at **www.coutinho.nl/prhc**. This material consists of, among other things, knowledge clips, interviews, examples of different types of studies and assignments for the assessment of research literature.

Part I
Introduction to practice-based research

Research competence for a professional context

1

Children from socioeconomically disadvantaged neighbourhoods often too fat

Whereas barely two percent of ten-year-olds are overweight in one area of Amsterdam, nearly forty percent of ten-year-old children are obese less than a kilometre away. "This fattening environment is not good for anyone, but it is especially harmful to poor and poorly educated people." (…)

Both areas are residential neighbourhoods that border a park. There are a few schools, two supermarkets and some retail stores. Overtoomse Veld is home to five snack bars while Willemspark has four, but Willemspark has more small restaurants. This means the massive differences in weight cannot be attributed solely to structure and availability. (…)

Source: Versprille & Brester (2017)

When you open a paper or turn on the TV, you are often confronted with a problem that pertains to your own professional practice. Such problems should raise some questions in you. When considering the problem of obesity in poor neighbourhoods that are home to many poorly educated people, you could e.g. ask yourself: "Why is it that there are far more obese children in neighbourhoods in Amsterdam with many poor and poorly educated residents than in neighbourhoods with many rich and highly educated residents?"

Practice-based research allows you to specifically examine problems from practice (practical problems) and come up with relevant **solutions** to the problems in question. Doing so requires an **investigative and reflective attitude**. By looking at the world around you with an open and critical look, identifying areas of improvement, asking questions, wanting to know and understand more, looking for explanations and answers, questioning the obvious, wanting to contribute to improvement and innovation, and sharing knowledge and ideas, you can achieve lifelong personal and professional development and contribute to the innovation in your field. Vice versa, conducting practice-based research can contribute to the development of an investigative attitude.

1.1 The research spectrum

Before taking a closer look at how to conduct **practice-based research**, we first want to take a moment to consider the characteristics of practice-based research compared to more theory-based forms of research (also known as fundamental research, see Table 1.1).

The basic principles of theory- and practice-based research are the same. When conducting either type of research, you are expected to meet the scientific criteria and you choose what research methods and techniques to use depending on what is customary in the specific field of research you operate in. Furthermore, both types of research are designed to generate knowledge that is transferable to other contexts than those that were initially studied. However, there are several specific characteristics that are particularly applicable to practice-based research. The Validatiecommissie Kwaliteitszorg Onderzoek (Validation Committee for Research Quality Assurance) (2009) writes the following:

> Practice-based research is defined as research that is rooted in the professional practice and contributes to the improvement of and innovation in said professional practice. This is done by generating knowledge and insights, but also by delivering applicable products and designs and concrete solutions to practical problems. Furthermore, this research is generally multi-, inter- and/or transdisciplinary in nature and embedded in myriad internal and external organisational ties, with retention of the scientific reliability and validity of the research itself. The research is closely connected to the field of education via its contribution to educational activities, the professionalisation of lecturers and innovation of the curriculum. In light of the relevance of the research to, and impact on, the professional practice, education and society as whole, the resulting knowledge is disseminated via myriad channels and to various target groups.

Although it is difficult to clearly distinguish between theory-based and practice-based research, the two do have a different focus. Practice-based research can be described as research for which the research question is derived from professional practice (at the very least, it is important that practical issues from the professional field are recognised or acknowledged and that the researchers work together with people from the field of practice to answer the research question) and the results can contribute directly to that professional practice (e.g. in the form of new knowledge, insights, guidelines, protocols, interventions, measuring instruments and practically useful, creative and innovative solutions (Forum, 2011)).

From the onset, the researcher and the representatives from the field of practice share responsibility for the research process and the results of the research to ensure that not only scientific knowledge but also the knowledge,

experience and expertise of practical professionals and other stakeholders can be combined. Furthermore, this ensures the results of the research can be utilised in practice more easily and faster (Wetenschappelijke Raad voor het Regeringsbeleid, 2013).

Practice-based research often involves **transdisciplinary and inter-professional collaboration**. This means that professionals and other stakeholders with various backgrounds work together on a joint solution (direction). For example, practice-based research conducted in the field of healthcare and wellbeing often involves collaboration between various healthcare and wellbeing professionals, researchers, lecturers, producers of medical aids, suppliers, professional associations, civilians, patients and sometimes even the parents or family members and informal carers of patients. Those who will ultimately benefit from the research results are included in the research process and play a clear role in it; i.e. it concerns research conducted as part of a network for and with other relevant stakeholders. The research is certainly not centred solely around the development of new knowledge, but also on the development of new products or services throughout the entire practical chain. These aspects are often less prevalent in **theory-based research**, where there is a greater focus on the development of new theories (scientific modelling).

Table 1.1 Spectrum of characteristics of theory-based and practice-based research

	Theory-based research	Practice-based research
Focus in consideration	Methodologically thorough	Practically relevant
Orientation	Centred around knowing/ theory, transferability and new knowledge (modelling)	Centred around applications and improvements for the practical context (short-cycle, practically useful products and methods)
Quality requirements	Valid, transparent, plausible	Useful, participatory, innovative
Methodologies	Research and analyse	Advise and intervene
Scope	National (or global)	Regional (or specific context)
Knowledge sharing and impact	Scientific journals and presentations at conventions	Continuous impact on research, education and practice/society via different forms and products
Stakeholders	Researchers, knowledge partners	Researchers, lecturers, practical professionals, civilians, patients/patient associations, policymakers, businesses, etc. (in cocreation)
Knowledge institution	University and research institute	University of applied sciences (and, to a growing extent, vocational education institutions)

Examples of theory-based and practice-based research

Theory-based research can involve, for example, a study of the development of immunity to COVID-19 and the role that antibodies (as a response to infection) play in this process.

Defence against corona quickly disappears from the blood

(…) Antibodies against the new coronavirus will disappear from the blood after a few months. This raises questions about the feasibility of herd immunity and the effectiveness of vaccines.

The body's defence against the new coronavirus wears down quickly. The antibodies that people produce when they are infected with the SARS-CoV-2 virus can disappear from their blood in just a few months' time, which may make these patients vulnerable to infection with COVID-19 all over again. That is the result of a British study conducted among 65 COVID-19 patients in the Guy's and St Thomas' Hospital in London. The manuscript in which the results are described appeared online this past weekend, although it has not yet been published in a scientific journal. This marks the first time that the development of immunity in COVID-19 patients has been studied over a longer period of time. (…)

Source: Voormolen (2020)

Practice-based research can centre around, for example, how **healthcare professionals** can provide care to these people – both at home and remotely – in a socially distant society.

Blended physiotherapy for physical recovery of patients with COVID-19

COVID-19 has a significant impact on the patients it affects, who may experience a major loss of muscle strength and physical condition. A research group from Utrecht University of Applied Sciences is developing blended physiotherapy to assist these patients with their physical recovery. With blended physiotherapy, some of the care is offered remotely with the help of eHealth.

"A significant percentage of patients recovering from COVID-19 has care needs for which a physiotherapist is the go-to caregiver. (…) We are looking for ways to help this group of people return to their former level of physical strength and condition as quickly and effectively as possible. What are their care needs and how can physiotherapists offer the necessary care in their practices, in the patients' homes and remotely? (…)

We are collaborating with physiotherapists, patients and eHealth providers to ensure a proper coordination between the needs of users and the technical possibilities of developers." (…)

Source: Utrecht University of Applied Sciences (2020)

The divide between the different types of research and their characteristics is thin, however. For example, it is not true that practice-based research is the exclusive domain of higher education, that it cannot have a national (or even international) focus, that it cannot result in new theories or that the methodology used is weaker. Likewise, it would be false to assume that universities never consider the practical implications of their research. There is a large degree of overlap between both types of research.

It goes without saying that there is also a wide variety of goals and approaches within the field of practice-based research. Some research questions pertain to the direct professional practice (substantive questions), while other questions focus more on, for example, the professionalisation of the job (work-related questions).

Examples of substantive questions

- What exercise therapy is most effective for stabilising the muscles in the shoulder girdle?
- What test offers a complete overview of the communicative abilities of a stroke patient?
- What lifestyle advice is important for (parents of) toddlers with a high risk of myopia (near-sightedness)?
- How do pregnant women feel about monitoring their baby's health via at-home CTG (cardiotocography)?
- What factors play a role in the decision to admit people suffering from dementia in a care home?
- What knowledge do parents possess of dental care for infants?
- How can the design of a wearable instrument (e.g. a wrist band that uses sensors to gather personal data) be improved?

Examples of work-related questions

- To what extent has the use of the International Classification of Functioning, Disability and Health (ICF) affected professional conduct in the field of podiatry?
- Does using digital read-out technology reduce the costs of manufacturing a lower-leg prosthesis?
- To what extent do healthcare professionals apply the principles of evidence-based practice (EBP) in their everyday conduct?
- What is needed to implement the use of eHealth for heart failure in home care practice?
- What factors affect an obstetrician's decision to perform an episiotomy during a birth?
- How can the learning curve for the successful administration of an IV be improved?

The angle and approach of practice-based research depends greatly on the research question (see Chapter 4). Furthermore, the "products" that the research is to result in are partly determined by the nature of the professional practice (Losse, 2018). After all, specific professional fields naturally have a greater or lesser focus on certain products and services: analysis (e.g. laboratory staff), giving advice (e.g. communication consultants), creating a design (e.g. engineers), manufacturing a product (e.g. dental prosthetists) and/or performing actions (e.g. nurses).

1.2 Embedding practice-based research in higher vocational education

Since 1986, universities of applied sciences are legally obligated to conduct practice-based research. In 1999, universities of applied sciences gave substance to their research task by establishing **chairs** and knowledge groups in which lecturers and researchers (often in the form of lecturer-researchers) conducted practice-based research. These days, practice-based research is strongly embedded and greatly professionalised in higher education institutions. Practice-based research by chairs receives broad appreciation and projects are often born out of a varied and active network that includes educational institutions and many other stakeholders from the professional practice. In order to tie in well with the field's practical needs, practice-based research often has a short lead time.

With their practice-based research, chairs give an important impulse of innovation to that professional practice and to the field of education. This is clearly illustrated in Figure 1.1, in which these three components come together to form a triangle that leads to innovation and practical improvements.

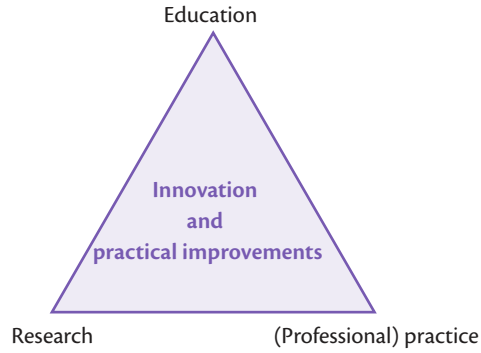

Figure 1.1 The triangle of education, research and (professional) practice leads to innovation and practical improvements