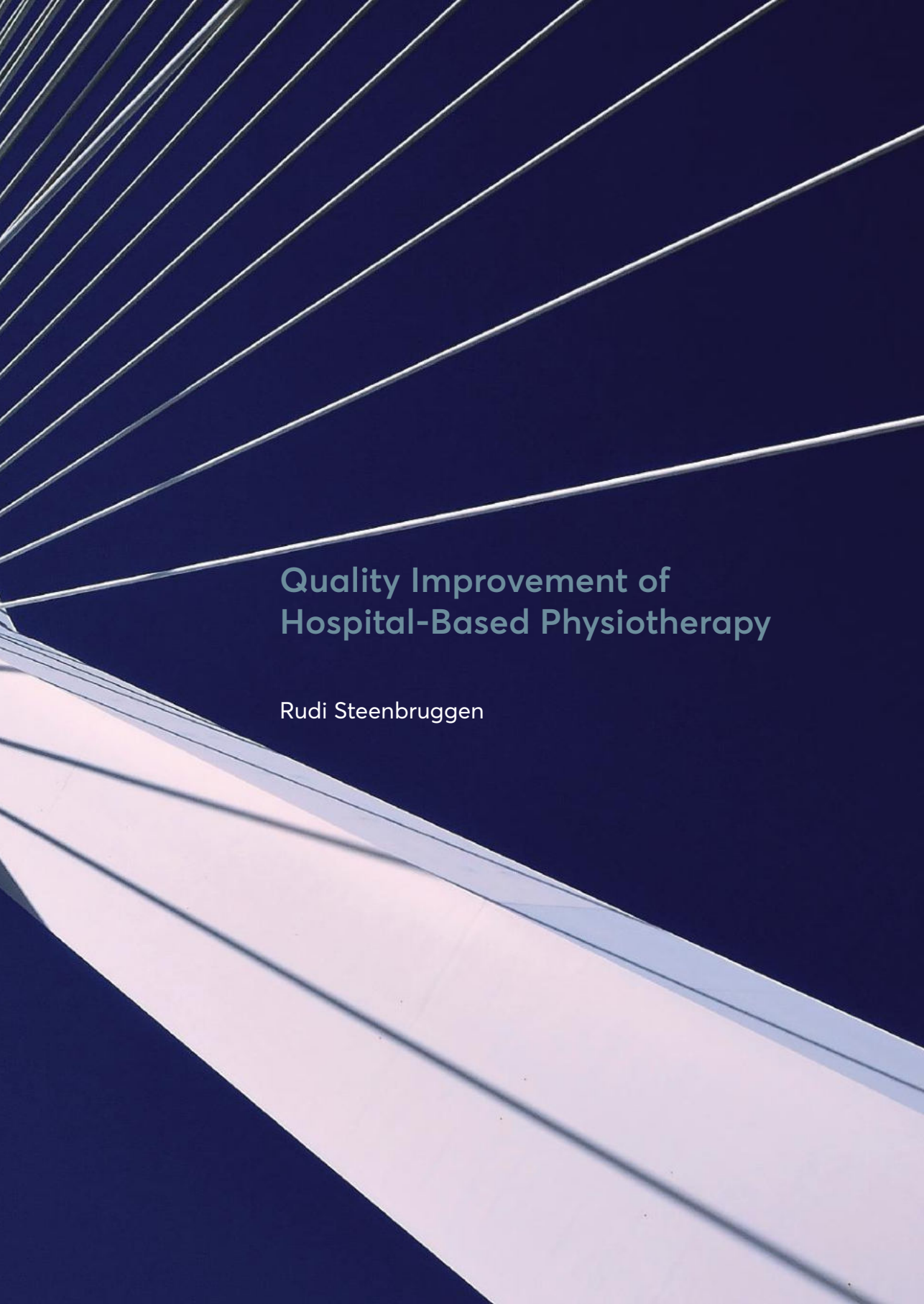

Quality Improvement of Hospital-Based Physiotherapy

Rudi Steenbruggen

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Quality Improvement of Hospital-Based Physiotherapy

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Rutger Albert Steenbruggen
geboren op 29 juni 1965
te Deventer

Promotoren:
Prof. dr. P.J. van der Wees
Prof. dr. P.L.P. Brand (Rijksuniversiteit Groningen)

Copromotoren:
Dr. T.J. Hoogeboom
Dr. M.J.M. Maas

Manuscriptcommissie:
Prof. dr. C.R.M.G. Fluit
Prof. dr. B.R. Bloem
Prof. dr. R.H.H. Engelbert (Universiteit van Amsterdam)

Paranimfen:
Bregtje Nijland
Wieke Steenbruggen

Quality Improvement of Hospital-Based Physiotherapy

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at 10:30 am

by

Rutger Albert Steenbruggen
born on June 29, 1965
in Deventer, the Netherlands

Supervisor:
Prof. dr. P.J. van der Wees
Prof. dr. P.L.P. Brand (University of Groningen)

Co-supervisors:
Dr. T.J. Hoogeboom
Dr. M.J.M. Maas

Manuscript Committee:
Prof. dr. C.R.M.G. Fluit
Prof. dr. B.R. Bloem
Prof. dr. R.H.H. Engelbert (University of Amsterdam)

Paranymphs:
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Inhoudsopgave

Chapter 1

General Introduction

General introduction

In the Netherlands, 69 hospital organisations operate 116 hospital locations, all of which have a hospital-based physiotherapy department.[1] Eight of these physiotherapy departments have been outsourced to primary care (private sector) mainly for financial reasons.[2] After 15 years of being a manager of hospital departments of physiotherapy, my personal experience was that, due to the absence of a uniform quality system for hospital physiotherapy, a platform lacked to develop the profession adequately further through mutual reinforcement. From my perspective, this is undesirable; especially when we consider the relevance of hospital-based physiotherapy for optimal patient care in hospitals, the size of this sector and the way it is embedded within the national association of physiotherapy. Across all 116 hospital locations, an estimated 2,100 employees work within the department of hospital-based physiotherapy. In addition to management and administrative staff, 1,825 of these employees are hospital-based physiotherapists, 77% of whom hold a bachelor's degree, and 23% a (professional) master's or PhD degree. Approximately 75% of their work takes place on hospital wards and 25% in the outpatient department.[3] The enormous learning potential of this group now remains largely unexploited in terms of effectively and efficiently improving quality and thus strengthening their national and local position.

Although most hospital-based physiotherapists (87%) are registered in the central quality register of the Royal Dutch Society for Physiotherapy (KNGF), this organisation has primarily fostered the quality of primary care physiotherapists.[3] The KNGF aims to take care of the promotion and monitoring of the quality of the professional and scientific practice throughout the entire field of physiotherapy by maintaining a quality register. From the standpoint of the KNGF, the professional physiotherapy group remains relevant if the care it provides remains relevant for the patient.[4] Since 2015, the KNGF has worked on the modernisation of its quality system. In 2020, this resulted in an integrated quality system for physiotherapists, known as KRF-NL. An essential part of this system is professional development. The integrated quality system of the KNGF consists of three parts: a professional component, a profession component and intervision.[5] Intervision, or peer observation and feedback, was selected as a pillar in the quality system because there is evidence demonstrating this method to enable self-reflection, i.e. that it promotes professionals to talk about doubts and emotions and to work on self-awareness.[6] KRF-NL encourages physiotherapists to prioritise professional development to continue to improve the quality of their patient care.[7]

During this modernisation period, several pilots of intervision and external audits were performed in primary care physiotherapy to evaluate the feasibility and scientific substantiation of this new quality system.[8-12] In 2017, based on the favourable experiences in primary care physiotherapy, the board of the Dutch Association for Physical Therapy in Hospitals (NVZF) signalled the need for a tailor-made quality system for hospital-based physiotherapy.[13] As secretary of the board I considered the KRF-NL quality system at

best a moderate fit for this purpose in terms of professional competencies and a poor fit in terms of complementing the generic quality systems that were already implemented in hospitals. As a result, hospital-based physiotherapy departments and hospital-based physiotherapists experienced insufficient support of their ability to improve their specific professional qualities. Despite the availability of KRF-NL, a uniform and applicable quality system for hospital-based physiotherapy was still missing. Within the board of the NVZF, this shortcoming was viewed as a potential threat to the quality, positioning and profiling of hospital-based physiotherapy.[13]

The **goal** of this PhD track, as documented in this thesis, is to develop an applicable quality system for hospital-based physiotherapy departments that complements generic hospital quality systems. In addition, this research examines the effects of this quality system on the professional development of hospital-based physiotherapists' competencies and the promotion of quality of hospital-based physiotherapy.

Quality of hospital-based physiotherapy: scope and relevance of this thesis

Professional physiotherapy associations worldwide are continuously aiming to improve the quality of care provided by their members. The necessary qualities of members are described in professional competency profiles.[14-20] Besides the quality of these individual care providers, according to Donabedian (1980), quality can also be defined on two other levels: quality of the institution, and quality of the care system.[21] While generic hospital quality systems such as JCI or Qmentum (external auditor companies) focus on institutional quality levels, they do not provide a framework for understanding hospital-based physiotherapy quality or individual professional growth.[22,23] The development of a specific quality system for hospital-based physiotherapists and hospital-based physiotherapy may therefore support physiotherapy departments to improve their position and profile. To ensure that such a system is applicable and effective in practice, not only managers of hospital-based physiotherapy and hospital-based physiotherapists but also the main stakeholders of hospital physiotherapy must be involved.

In this thesis opportunities are offered for departments of hospital-based physiotherapy and its stakeholders to improve the quality of the care provided, both on an individual professional and a departmental level. At the individual level, peer observation and feedback in the form of a tracer is easily applicable within hospitals because it is linked to the tracer methodology as known by hospital-based professionals from JCI and Qmentum. In a tracer, a healthcare professional follows the track – the 'trace'- of a colleague within the organisation for a certain period to identify quality issues.[22] At a departmental level, this thesis meets the outlined need for a tailor-made quality system for hospital-based physiotherapy, considering both the employees of the department and the most important stakeholders receiving services. Specifically, positioning and profiling could be improved.

Quality management

Quality of care can be defined as the degree of similarity between criteria of good care (desirable care) and the practice of care (actual care) at the level of the individual care provider, the institution and the care system.[21]

Individual professional. Performance assessment of the individual care provider is complex because clinical performance is highly context-specific and cannot be standardised, given the uniqueness of the patient problem and each patient's context.[24-27] Within Miller's pyramid of competence assessment (figure 1), the lower levels of professional competence refer to what a professional knows, knows how to do, and shows how to do in a theoretical or simulated situation. The assessment of these behaviours can be standardised because the content and context are pre-defined. However, the higher level of Miller's pyramid - how someone applies these behaviours in clinical practice - can only be assessed by direct observation or tracing professionals in the specific healthcare domain.[28,29]

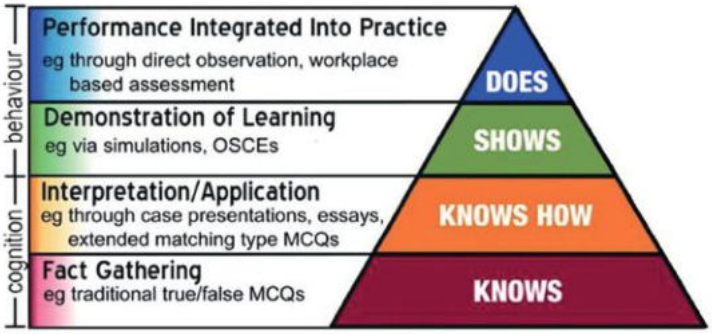

Figure 1; Miller's Pyramid of Competence Evaluation through Performance. Burns and Mehay (2009)

Care system. A quality system is required to determine whether the practice of care provided by physiotherapists in general (care system) meets the criteria of desirable care and to stimulate continuous quality improvement. Such a formalised system normally documents processes, procedures, and responsibilities for achieving quality policies and objectives, and helps to coordinate and direct an organization's activities to meet customer and regulatory requirements and improve its effectiveness and efficiency continuously.[30] A quality system typically consists of four components: a professional profile with core competencies, a system of standards and guidelines, external accountability and systematic quality control.[31] To assess the quality of the provided hospital-based physiotherapy care, the alignment between vision, strategy, desired outcomes and performance needs to be established.[32] Profession-specific performance assessment feedback can help professionals to identify areas of professional practice that need improvement. These feedback interventions can also move the specific professionalism, defined as the conduct, aims, or qualities that

characterise or mark a profession or a professional person,[33] a step forward. This process can be an essential component in raising the standards of hospital-based physiotherapy care.[34,35]

Institution (department). The degree of similarity between criteria of desirable care and the practice of care can be quantified by using structure, process and outcome quality indicators.[21] *Structure* is defined as the setting in which health care is provided (e.g., facilities, equipment, numbers, and qualification of personnel); *process*, as what is actually done in giving and receiving care (e.g., patient and healthcare professional activities, healthcare professional-patient communication and information); and *outcome*, as the results of the provided health care (e.g., health status, satisfaction, and costs). [36,37] Because organisational restructuring due to financial constraints is common in multidisciplinary hospital care, a hospital-based physiotherapy quality system should be sufficiently flexible towards organisational changes and the associated changing roles of hospital physiotherapists. This dynamic role places an ever-increasing emphasis on interprofessional communication and collaboration skills. It also highlights the ongoing importance of integration of these skills within the existing standards of professionalism and the relation between individual, professional and thus departmental quality.[38] When hospital restructuring takes place, physiotherapists, as part of allied health care services, need their specific quality system to describe the effect of hospital and departmental restructuring on their professional role, and subsequently on their contribution to integrated hospital care.[39,40] Irrespective of the aforementioned, it is important that organizations focus on promoting clinician development and engagement in quality improvement.[41]

A frequently used tool in the context of quality management is the EFQM (European Foundation for Quality Management) model.[42] This model focuses on the organisational management of people: how can professional knowledge and skills be improved, within the frameworks of current generic quality systems and professional competency profiles?[1] The EFQM model makes it clear that quality improvement provides a strong relationship between enablers, results, and learning, creativity and innovation (figure 2).

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[1] *The Dutch translation of this model is called the INK (Instituut voor Nederlandse Kwaliteit) model.[42] Since November 2019, there is a revised EFQM model, EFQM Excellence 2020. The INK model has not (yet) been updated and is the same as the 2019 EFQM model. Therefore, the previous EFQM model is still used in this thesis.*

Enablers (something or someone that makes it possible for a particular thing to happen or be done) are divided into five areas: leadership, people, strategy, partnership & resources, and processes, products & services. The efforts in these five organisational areas translate into (measurable) results in the four areas of people results, customer results, society results, and business results. Evaluating the results creates a feedback loop on learning, creativity and innovation to the enablers.

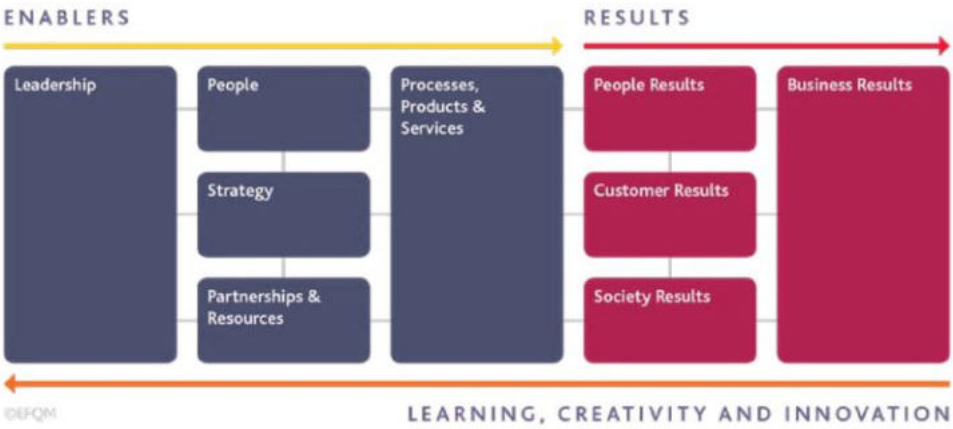


Figure 2; EFQM Model (version 2019). Source: European Foundation for Quality Management. www.efqm.org

Objectives, method and outline of this thesis

The purpose of this thesis is to develop an applicable hospital-based physiotherapy quality system that complements generic hospital quality systems, and reflects on specific professional quality. Such development addresses the NVZF's policy goal to design a quality model that is: 1) tailored to hospital-based physiotherapy, 2) feasible within existing hospital quality systems such as JCI and Qmentum, and 3) effective in increasing the quality of hospital-based physiotherapists and hospital-based physiotherapy.[13] This purpose is elaborated into the following research questions:

- What is the impact and feasibility of peer observation and feedback in the form of a tracer on patient communication of hospital-based physiotherapists?
- To which extent can professional competencies of healthcare professionals, including hospital-based physiotherapists, be positively influenced by using peer observation and feedback in the form of a tracer?
- Which are the important quality characteristics of a hospital-based physiotherapy department from the perspective of hospital-based physiotherapists and their managers (inside-out perspective) and from the perspective of its most important stakeholders (outside-in perspective)?

- What is the most plausible design for a quality model with associated tools to promote the quality of hospital-based physiotherapy in general, and hospital-based physiotherapists specifically?

A twin-track approach will be used to achieve these goals. In the first track, we will focus on the individual professional level by exploring the most important professional competencies of individual hospital-based physiotherapists and how to best support their professional development. As a starting point for this, we will review the experiences gained in the pilots of peer review and external audit in primary care physiotherapy, as well as the methodology of quality improvement systems known in hospitals, such as JCI and Qmentum. In the second track, we will focus on the organisation of the hospital-based physiotherapy department. We will look for quality indicators of hospital-based physiotherapy which have not been established before.

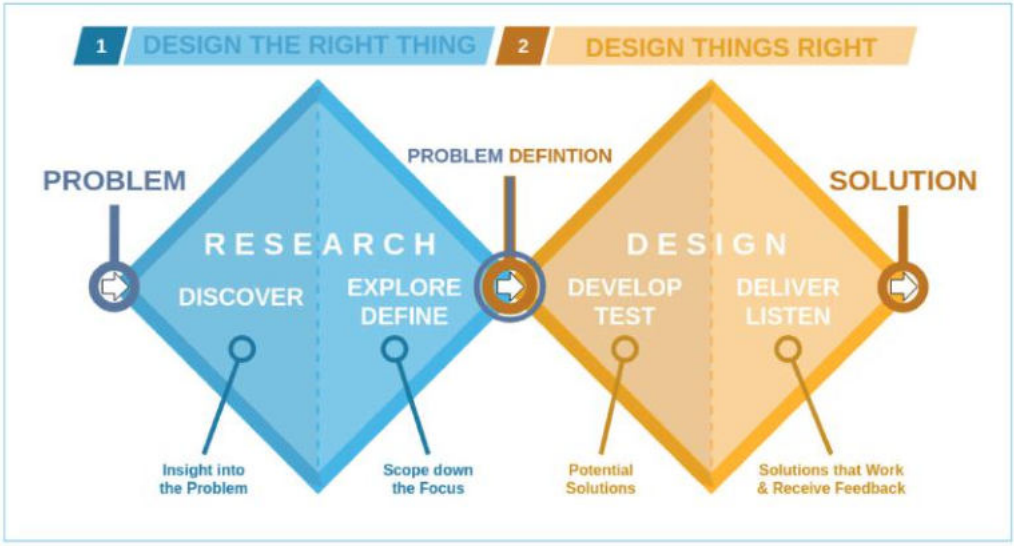


Figure 3; The Double Diamond Model (Banathy, 1996)

For this purpose, we will use the double-diamond model (figure 3).[44] The two diamonds represent a process of exploring an issue more widely or deeply (divergent thinking) and then taking focused action (convergent thinking). We will use the discover and define phase to establish quality indicators of hospital-based physiotherapy from both an inside-out and outside-in perspective. The result of these two perspectives will be developed into a prototype quality model for hospital-based physiotherapy as a foundation for quality management.

Track 1 – The hospital-based physiotherapist

Chapter 2 describes the impact and feasibility of a tailor-made quality improvement program addressing patient communication on the professional development of hospital-based physiotherapists.

Chapter 3 reports the results of a scoping review on the tracer method as a quality improvement tool at individual professional level. The purpose of this review is to describe how, by whom, and with what effect the tracer method is applied as a formative professional development instrument between healthcare professionals of equal status, and to identify the types of scientific evidence using the tracer method.

Track 2 – The department of hospital-based physiotherapy

In **chapter 4**, we used a RAND-modified Delphi study to identify the most important quality indicators of a hospital-based physiotherapy department from the perspective of hospital-based physiotherapists and their managers (inside-out perspective).

Chapter 5 identifies key stakeholders of hospital-based physiotherapy and records - using semi-structured interviews - these key stakeholders' views and opinions on the most important quality indicators for hospital-based physiotherapy departments (outside-in perspective).

In **chapter 6** a framework for improving the quality of hospital-based physiotherapy, as a foundation for a quality system to be developed thereafter, is designed. To achieve this objective, a DBR (Design-Based Research) research design, where potential users of the quality model are involved, is followed.

References

1 *Volksgezondheidenzorg.info*. (2020, 1 oktober). Ziekenhuiszorg | Cijfers & Context. https://www.volksgezondheidenzorg.info

2 Steenbruggen, R., & Boven, H. (2019). Inside outsourcing. *Physiotherapy, 105*, e70–e71. https://doi.org/10.1016/j.physio.2018.11.036

3. Dutch Association for Physiotherapy in Hospitals (NVZF). (2019, October). *Formation survey hospitals 2019*. NVZF, Amersfoort.

4. KNGF. (2021, juni). *Beleidsdocument Kwaliteitsregister Fysiotherapie NL* (11.0).

5. Royal Dutch Society for Physiotherapy (KNGF). (2021). *KRF NL*. KRF NL. https://www.kngf.nl/krf-nl

6. Derksen, F., Bensing, J., Kuiper, S., Van Meerendonk, M., & Lagro-Janssen, A. (2014). Empathy: what does it mean for GPs? A qualitative study. *Family Practice, 32*(1), 94–100. https://doi.org/10.1093/fampra/cmu080

7. De fysiotherapeut. (2020, 19 maart). *Kwaliteitsregister fysiotherapie*. https://defysiotherapeut.com/over-fysiotherapie/kwaliteit/

8. Van Dulmen, S. A., Maas, M., Staal, J. B., Rutten, G., Kiers, H., Nijhuis-van Der Sanden, M., & Van der Wees, P. (2014). Effectiveness of Peer Assessment for Implementing a Dutch Physical Therapy Low Back Pain Guideline: Cluster Randomized Controlled Trial. *Physical Therapy, 94*(10), 1396–1409. https://doi.org/10.2522/ptj.20130286

9. Maas, M. J. M., Van Dulmen, S. A., Sagasser, M. H., Heerkens, Y. F., Van der Vleuten, C. P. M., Nijhuis-van Der Sanden, M. W. G., & Van der Wees, P. J. (2015). Critical features of peer assessment of clinical performance to enhance adherence to a low back pain guideline for physical therapists: a mixed-methods design. *BMC Medical Education, 15*(1). https://doi.org/10.1186/s12909-015-0484-1

10. Maas, M. J. M., Nijhuis-van Der Sanden, M. W. G., Driehuis, F., Heerkens, Y. F., Van der Vleuten, C. P. M., & Van der Wees, P. J. (2017). Feasibility of peer assessment and clinical audit to self-regulate the quality of physiotherapy services: a mixed methods study. *BMJ Open, 7*(2), e013726. https://doi.org/10.1136/bmjopen-2016-013726

11. Maas, M. J., Driehuis, F., Meerhoff, G. A., Heerkens, Y. F., Van der Vleuten, C. P., Nijhuis-van Der Sanden, M. W., & Van der Wees, P. J. (2018). Impact of Self- and Peer Assessment on the Clinical Performance of Physiotherapists in Primary Care: A Cohort Study. *Physiotherapy Canada, 70*(4), 393–401. https://doi.org/10.3138/ptc.2017-40.pc

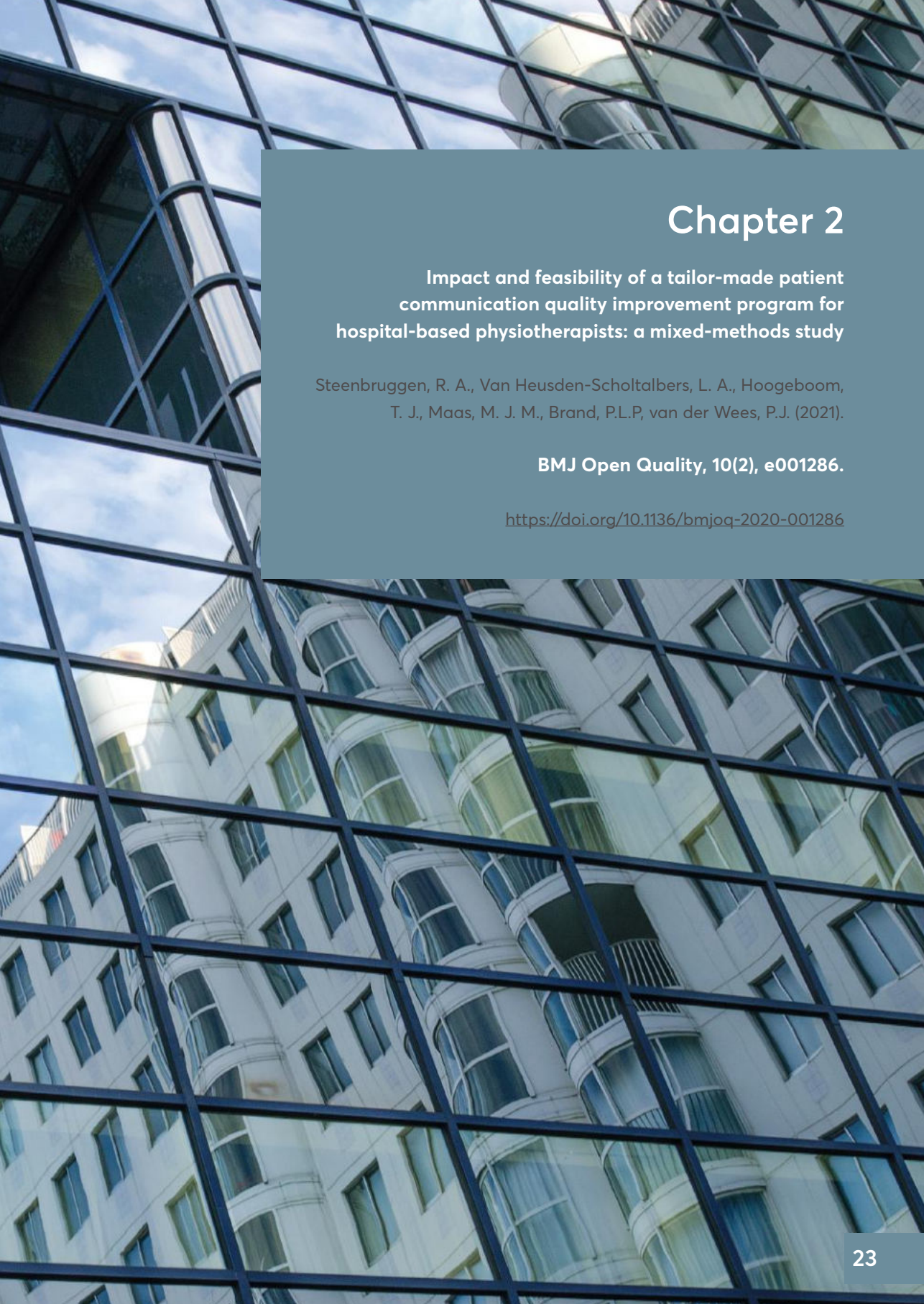
12. Maas, M. J., Van der Wees, P. J., Braam, C., Koetsenruijter, J., Heerkens, Y. F., Van der Vleuten, C. P., & Nijhuis-van Der Sanden, M. W. (2015). An Innovative Peer Assessment Approach to Enhance Guideline Adherence in Physical Therapy: Single-Masked, Cluster-Randomized Controlled Trial. *Physical Therapy, 95*(4), 600–612. https://doi.org/10.2522/ptj.20130469

13. Dutch Association for Physiotherapy in Hospitals (NVZF). (2017, november). *MKIB in de 2e Lijn*. NVZF, Amersfoort.

14. American Physiotherapy Association. (2003). *Guide to Physiotherapist Practice, Rev 2nd Ed* (Revised Second edition). Amer Physiotherapy Association. https://doi.org/10.2522/ptguide3.0_978-1-931369-85-5

15. Canadian Alliance of Physiotherapy Regulators, Canadian Council of Physiotherapy University Programs, Canadian Physiotherapy Association, & Physiotherapy Education Accreditation Canada. (2017). *Competency Profile for Physiotherapists in Canada (2017)*. National Physiotherapy Advisory Group. https://physiotherapy.ca/sites/default/files/competency_profile_final_en_0.pdf
16. Chartered Society of Physiotherapy. (2012). *Quality Assurance Standards for Physiotherapy Service Delivery*. https://www.csp.org.uk/system/files/csp_quality_assurance_standards.pdf
17. Physiotherapy Board of New Zealand. (2018). *Physiotherapy Standards Framework*. https://www.physioboard.org.nz/wp-content/uploads/2018/03/Physiotherapy-Board-Code-Standards-Thresholds.pdf
18. Physiotherapy Board of Australia. (2020). *Codes and Guidelines*. Accessed: August 10th, 2020, https://www.physiotherapyboard.gov.au/Codes-Guidelines.aspx
19. KNGF Beroepsprofiel Fysiotherapeut, J.H.A.M. Mutsaers, T.H. Ruitenbeek, M.A. Schmitt, C. Veenhof, F. Driehuis, Koninklijk Nederlands Genootschap voor Fysiotherapie (KNGF), Amersfoort, 2021.
20. Euwes M, Engelbert RHH, Geleijn E, *et al*. *Beroepscompetentieprofiel ziekenhuisfysiotherapeut*. Amersfoort; NL: NVZF, 2010: 25-40
21. Donabedian A. The Definition of Quality and Approaches to Its Assessment: Vol 1. Explorations in Quality Assessment and Monitoring. Ann Arber, MI: Health Administration Press 1980.
22. The Joint Commission. *The joint Commission big book of policies and procedures for hospitals*. Oak Brook III: Joint Commission Resources, 2019.
23. Accreditation Canada. (2021). *Qmentum Accreditation Program*. https://accreditation.ca/qmentum-accreditation/
24. Klazinga, N., Lombarts, K., & van Everdingen, J. (1998). Quality management in medical specialities: the use of channels and dikes in improving health care in The Netherlands. *The Joint Commission Journal on Quality Improvement*, *24*(5), 240–250.
25. Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*. https://doi.org/10.1097/00001888-199009000-00045
26. Epstein, R. M., & Hundert, E. M. (2002). Defining and Assessing Professional Competence. *JAMA*, *287*(2), 226–235. https://doi.org/10.1001/jama.287.2.226
27. College voor de Beroepen en Opleidingen in de Gezondheidszorg, & Scherpbier, P. A. (2008). *Eindrapportage Projectgroep Kwaliteitsindicatoren*. College voor de Beroepen en Opleidingen in de Gezondheidszorg. https://adoc.tips/queue/eindrapportage-projectgroep-kwaliteitsindicatoren-olv-prof-d.html
28. Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*. https://doi.org/10.1097/00001888-199009000-00045
29. Williams, B. W., Byrne, P. D., Welindt, D., et al. (2016). Miller's pyramid and core competency assessment: A study in relationship construct validity. *Journal of Continuing Education in the Health Professions*. https://doi.org/10.1097/CEH.0000000000000117
30. American Society for Quality. (2021). *What is a Quality Management System (QMS)? | ASQ*. ASQ. https://asq.org/quality-resources/quality-management-system

31. Klazinga N, Lombarts K, van Everdingen J. Quality management in medical specialities: the use of channels and dykes in improving health care in The Netherlands. *Jt Comm J Qual Improv* 1998;24(5):240–250 DOI:10.1016/S1070-3241(16)30378-9
32. Jones R, Jenkins F. Key tools and techniques in management and leadership of the allied health professions. Milton Keynes: Radcliffe Publishing Ltd. 2011:1-29
33. Queen's University (Canada). (2021). *Defining Professionalism*. Queen's University. https://www.queensu.ca/teachingandlearning/modules/ethics/11_s3_03_defining_professionalism.html
34. Hammond R, Lennon S, Walker MF. Changing occupational therapy and physiotherapy practice through guidelines and audit in the United Kingdom. *Clin Rehabil* 2005;19(4):365-371 https://doi.org/10.1191/0269215505cr784oa
35. Coulson-Thomas C. Re-engineering hospital and healthcare processes. *Health Estate J* 1997;51(7):14-15
36. Donabedian A. The quality of care: how can it be assessed? *Jama* 1988;260(12):1743-1748 https://doi.org/10.1001/jama.260.12.1743
37. Salzer MS, Nixon CT, Schut LJ, et al. Validating quality indicators: Quality as relationship between structure, process, and outcome. *Eval Rev*. 1997;21(3):292-309 https://doi.org/10.1177/0193841X9702100302
38. Lopopolo RB. Hospital restructuring and the changing nature of the physical therapist's role. *Phys Ther* 1999;79(2):171-185 DOI:10.1093/ptj/79.2.171
39. Lopopolo RB. The effect of hospital restructuring on the role of physical therapists in acute care. *Phys Ther* 1997;77(9):918-932 https://doi.org/10.1093/ptj/77.9.918
40. Lopopolo RB. Development of the professional role behaviors survey (PROBES). *Phys Ther* 2001;81(7):1317-1327 DOI:10.1093/ptj/81.7.1317
41. Shaikh, U., Lachman, P., Padovani, A. J., & McCarthy, S. E. (2020). The care and keeping of clinicians in quality improvement. *International Journal for Quality in Health Care*, *32*(7), 480–485. https://doi.org/10.1093/intqhc/mzaa071
42. European Foundation for Quality Management. (2021). *EFQM Home Page*. EFQM. https://www.efqm.org/
43. Instituut voor Nederlandse Kwaliteit. (2021). *https://www.ink.nl/modellen/ink-managementmodel/* . INK-managementmodel. https://www.ink.nl/modellen/ink-managementmodel/
44. Banathy, B. H. (1996). *Designing Social Systems in a Changing World*. Van Duuren Media.



Chapter 2

Impact and feasibility of a tailor-made patient communication quality improvement program for hospital-based physiotherapists: a mixed-methods study

Steenbruggen, R. A., Van Heusden-Scholtalbers, L. A., Hoogeboom, T. J., Maas, M. J. M., Brand, P.L.P, van der Wees, P.J. (2021).

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ABSTRACT

Background: In tailoring a quality improvement program for hospital-based physiotherapy, the original use of video-recordings was replaced by using the tracer methodology.

Objective: To examine the impact of a tailor-made quality improvement program addressing patient communication on the professional development of hospital-based physiotherapists, and to evaluate barriers and facilitators as determinants of feasibility of the program.

Methods: A mixed-methods study was conducted. Participants were clustered in groups per hospital and linked with an equally sized group in a nearby hospital. Within the groups, fixed couples carried out a two-hour tracer by directly observing each other's daily work routine. This procedure was repeated six months later. Data from feedback forms were analyzed quantitatively, and a thematic analysis of transcripts from group interviews was conducted.

Results: Fifty hospital-based physiotherapists from 16 hospitals participated. They rated the impact of the program on professional development, on a scale from 1 (much improvement needed) to 5 (no improvement needed), as 3.99 (SD 0.64) after the first tracer and 4.32 (SD 0.63) six months later. A mean improvement of 0.33 (95% CI 0.16 to 0.50). Participants scored, on a scale ranging from 1 to 5 on barriers and facilitators (feasibility), a mean of 3.45 (SD 0.95) on determinants of innovation, 3.47 (SD 0.86) on probability to use, and 2.63 (SD 1.07) on the user feedback list. All participants emphasized the added value of the tracer methodology and mentioned effects on self-reflection and awareness most.

Conclusions: The tailor-made quality improvement program, based on principles of the tracer methodology, was associated with a significant impact on professional development. Barriers and facilitators as determinants of feasibility of the program, showed the program being feasible.

INTRODUCTION

Quality of care is defined as the degree of similarity between criteria of good care (desirable care) and the practice of care (actual care) at three levels of care organization: quality of the care provider, quality of the institution and quality of the care system.[1] Professional physiotherapy associations are continuously aiming to improve the quality of care provided by its members. The required qualities of the care provider are described in professional competency profiles.[2-6]

Assessment of clinical performance is a complex skill because clinical performance is highly context-specific and cannot be standardised, given the uniqueness of the problem and the context of each patient. It requires professional judgment through observation and interpretation using global quality indicators.[7-9] Within Miller's pyramid, the lower levels of professional competence refer to what a professional knows, knows how to do, and shows how to do in a theoretical or simulated situation. The assessment of these behaviors can be standardised because the content and context are pre-defined. However, the higher level of Miller's pyramid - how someone applies these behaviors in clinical practice - can only be assessed by direct observation or tracing professionals in the specific healthcare domain.[10]

To improve quality among her members, the Royal Dutch Society for Physiotherapy (KNGF) has designed an integral physiotherapy quality system, the Quality Register Physiotherapy Netherlands.[11] Part of this system is a quality improvement program for physiotherapists in primary care, based on peer assessment and feedback. Peer assessment is based on the appraisal of authentic clinical records and video recordings of clinical encounters using quality criteria for clinical performance such as patient communication. According to the Dutch physiotherapy competency profiles of the general and hospital-based physiotherapist, the physiotherapist maintains an effective relationship with the patient and his relatives or others involved, to ensure a high quality of service provided to patients and a high degree of patient satisfaction.[12,13] Therefore, the physiotherapist should communicate in a clear, transparent, effective, and efficient way during the physiotherapy session.

The quality improvement program proved to be effective in creating awareness of clinical performance, improving evidence-based practice and patient-centeredness and increasing motivation to self-direct quality improvement.[14] However, this program is not feasible in the context of hospital-based physiotherapy, because hospital-based physiotherapy is bound to specific regulations regarding patient privacy and protection of personal data. An alternative to video recordings was sought in the use of the tracer methodology, which is also being used in hospital quality systems such as JCI and Qmentum.[15,16] In a tracer, a healthcare professional follows the track - the "trace" - of a colleague within the organization for a certain period in order to identify quality issues.[15] Because the literature on quality improvement shows that the tracer methodology is a useful method for assessing quality of care,[16-19] we used the tracer methodology to improve patient communication

of hospital-based physiotherapists as a tool for learning and professional development. This study aims to examine the impact of a tailor-made quality improvement program addressing patient communication on the professional development of hospital-based physiotherapists and to evaluate barriers and facilitators as determinants of the feasibility of implementing the program.

METHODS

Design and setting

This mixed-methods study was conducted from January to November 2019 in a convenience sample of Dutch hospital-based physiotherapists from 16 hospitals. According to Dutch regulations, this study was considered exempt from review by the Medical Ethics Review Committee of Isala Hospital, the Netherlands and registered under number WMO 181127. All participants gave informed consent.

Patient and public involvement

No patients or public were involved in this study because the opinion of the professional was leading.

Participants

All managers of hospital-based physiotherapy departments in the Netherlands received written study information by email, including goals of the study and contact details of the first two authors, along with an invitation to participate in the study. Hospitals willing to participate were asked to invite a minimum of three and a maximum of four licensed hospital-based physiotherapists from their teams in the study. Participation was voluntary, and all participants provided written informed consent. Participating physiotherapists were clustered in groups per hospital and linked with a group of equal size in a nearby hospital. The tailor-made quality improvement program consisted of two tracer visits per tracer cycle, one in each hospital (figure 1). The visiting physiotherapists carried out a tracer for two hours in which the observed physiotherapist carried out his or her normal work. Then a second appointment was made in the other hospital within two weeks in which these roles were reversed.

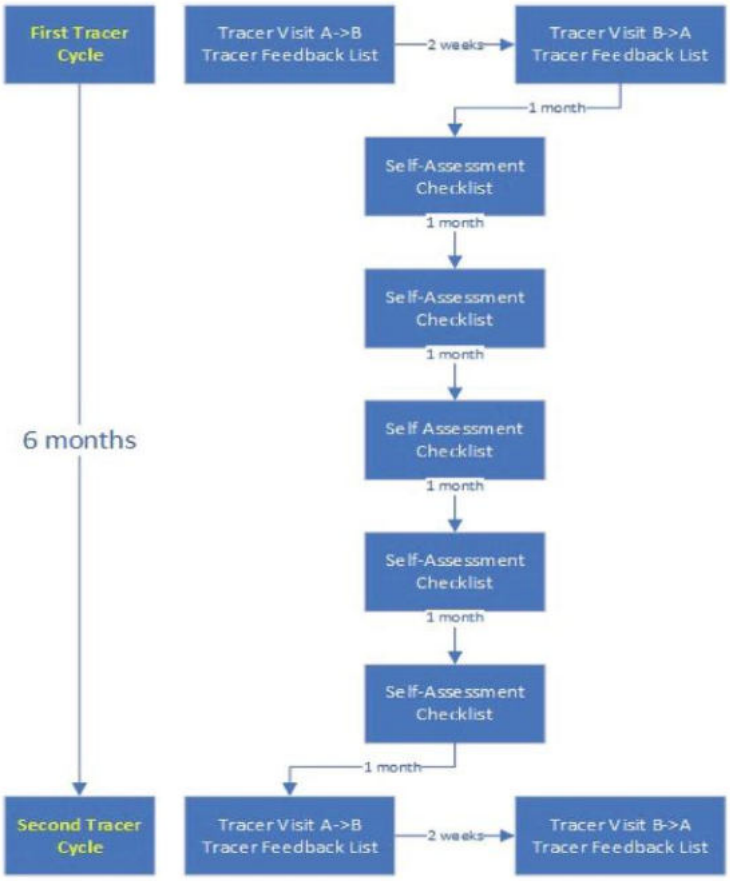


Figure 1 Graphical display of the research method

Development of the quality improvement program

Because the original quality improvement program on patient communication was fundamentally adapted to the setting of hospital-based physiotherapy, a pilot was conducted in 2018 with 8 hospital-based physiotherapists from 2 hospitals to test the revised program's impact and feasibility. This unpublished pilot generated feedback to improve the provisional program into a more sophisticated quality improvement as used in this study.

The quality improvement program

Before the quality improvement program was conducted, one of the coaches specifically trained by the KNGF for supervising quality improvement programs introduced the program to the participants, discussed rules of engagement, explained the use of the tracer feedback list and the tracer methodology, and designated fixed couples of

physiotherapists, each from a different hospital for the duration of the study. During the execution of the tracer, the visiting physiotherapists recorded their findings on a tracer feedback list, consisting of seven global quality indicators for patient communication: the patient's request for help, findings, outcomes, expectations, objectives, action planning and disruptive environmental stimuli (appendix 1). Each of these items could be scored on a 5-point Likert scale ranging from 1 (much improvement needed) to 5 (no improvement needed). Randomly, some of the tracers were observed by the coach or one of the two primary researchers [RS, LH], all with extensive experience in hospital-based physiotherapy within various hospitals and therefore well able to assess regular treatment behaviour, who evaluated in the first hour of the tracer to what extent the visiting physiotherapist influenced the treatment behavior of the observed physiotherapist, to get an indication whether normal treatment behavior was observed during the tracer, on a scale from 1 (no influence) to 10 (maximal influence).
Immediately after the tracer, a session was planned in which the visiting physiotherapist provided feedback with comments and explanations to his or her peer. The trained coach facilitated this session. The observed physiotherapist was expected to write an improvement plan according to the feedback.

Follow-up and evaluation

After the second tracer visit, a group interview was conducted on the spot to evaluate the feasibility and self-perceived impact of the program, moderated by RS and LH (both trained and experienced interviewers) and supported by the coach. Participants were encouraged to speak freely and to respond to each other. These interviews, planned for one hour, were audio-recorded and transcribed verbatim afterwards. A predetermined topic list was used concerning five questions (appendix 2).
Within two weeks after the visits, participants received a questionnaire on barriers and facilitators of implementing the program as determinants of the feasibility, where we defined feasibility as the probability that the programme in this form could be implemented in practice.[20] This questionnaire was based on the MIDI questionnaire,[21-23] and consisted of 26 items, divided into three domains of barriers and facilitators: determinants of innovation, probability to use, and used feedback list. For every statement in the list, scores could be given from 1 (completely disagree) to 5 (completely agree).
Subsequently, participants were asked to complete monthly self-assessment checklists on the impact of the program on quality improvement (appendix 3) during 5 months on which they could indicate how their professional performance in communicating with the patient developed in the past month, ranging from 1 (no development) to 10 (maximum development). The six items on the self-assessment checklist were: clarifying the patient's request for help, formulating the findings in plain language, using results to draw up the treatment plan in consultation with the patient, aligning the mutual expectations, SMART formulation of the expected results in consultation with the patient, and clearly formulating

the planned actions in consultation with the patient.
Six months after the initial tracer visits, the fixed couples of physiotherapists were asked to visit each other again, using the same procedure and tracer feedback list as in the first tracer cycle. This second tracer cycle was conducted without a coach or an observer and formed the final study activity for participants.

Analysis of impact of the program

Data from tracer findings using the tracer feedback list with quality indicators for patient communication from all tracers were analyzed using SPSS version 25, with standard t-tests for paired samples to compare means and proportions within groups over time. Two-tailed p values <0.05 were considered statistically significant. The average difference with 95% confidence intervals (CI) was separately analyzed. Data from the monthly self-assessment checklists were also analyzed using SPSS version 25 to compare means and proportions over time. Data from the tracer findings and the self-assessment checklists were examined for correlation using Pearson correlation coefficient. Transcripts of the group interviews on impact were checked against the field notes by the two first authors. Thematic analysis was used to study the transcripts, being an appropriate and powerful method to use when seeking to understand a set of experiences, thoughts, or behaviours across a data set.[24] To encourage trustworthiness the two primary researchers independently studied and coded eight transcripts. Differences in coding were discussed, and a codebook was created based on consensus. Analysis of transcripts was supported by ATLAS-ti version 8.4.[25]

Analysis of barriers and facilitators as determinants of feasibility
Data from the questionnaire about barriers and facilitators (feasibility) of the program were analyzed per item and category with SPSS version 25, using standard parametric tests. Transcripts of the group interviews on feasibility themes were checked against the field notes by the two first authors. Transcripts of the feasibility of the program were analysed as mentioned above, supported by ATLAS-ti version 8.4.[25]

RESULTS

Participants

Fifty Dutch hospital-based physiotherapists from 16 hospitals participated in the study. Characteristics of the participants are presented in table 1.

Characteristics	
Age in years, mean (SD)	39.4 (11.9)
Men : Women (%)	22 : 28 (43 : 57)
University : General teaching : District Hospital (%)	5 : 6 : 5 (32 : 36 : 32)
Experience in years, mean (SD)	15.7 (10.8)

Table 1: Characteristics of participating physiotherapists (n=50) from 16 hospitals

Impact of the program

Quantitative evaluation

The distribution of tracer feedback list data did not deviate significantly from the standard normal distribution. Participants scored a total average of 3.99 (SD 0.64) on quality indicators for patient communication in the first round of tracers and 4.32 (SD 0.63) six months later. Mean difference in overall average scores between the first and second round of tracers was 0.33 (95% CI 0.16 to 0.50, $p<0.05$). Overview of mean scores for patient communication at T0 and T1 and their differences are presented in table 2.

Item		Mean Difference	SD	95% CI	p-value (2-tailed)
1) Patient's Request for Help	T1 - T0	0.34	0.94	0.02-0.67	0.04
2) Findings	T1 – T0	0.38	0.72	0.14-0.62	0.00
3) Outcomes	T1 – T0	0.48	0.85	0.11-0.84	0.01
4) Expectations	T1 – T0	0.39	0.90	0.08-0.70	0.01
5) Objectives	T1 – T0	0.48	1.30	-0.05-1.01	0.08
6) Action Planning	T1 – T0	0.34	0.81	0.10-0.59	0.01
7) Environmental Incentives	T1 – T0	0.08	0.05	-0.27-0.44	0.64
Total	T1 – T0	0.33	0.57	0.16-0.50	0.00

Table 2: Overview of mean scores for patient communication at T0 (first tracer cycles) and T1 (second tracer cycles), and their differences (paired sampled T-test)

A closer look at aspects of communication shows that 5 of 7 aspects significantly improved: the patient's request for help, findings, outcomes, expectations, and action planning.
On the monthly self-assessment checklist for evaluating perceived development over the past month, the total average score of participants decreased from the first (T1; mean 6.00, SD 1.69) to the last (T5; mean 5.11, SD 2.81) moment of self-assessment ($p>0.05$) (table 3).

		Mean (SD)					
	Item	T1	T2	T3	T4	T5	T5-T1
1)	Clarifying the patient's request for help	5.69 (2.25)	5.71 (2.29)	5.38 (2.54)	5.68 (2.74)	4.97 (2.91)	-0.72 (4.00)
2)	Formulating the findings in plain language	6.39 (1.82)	5.95 (2.35)	5.68 (2.46)	5.67 (2.75)	5.05 (2.97)	-1.34 (3.71)
3)	Using results to draw up the treatment plan in consultation with the patient	5.77 (2.09)	5.83 (2.37)	5.46 (2.65)	5.38 (2.81)	5.29 (2.91)	-0.48 (4.05)
4)	Aligning the mutual expectations	6.40 (1.77)	5.97 (2.38)	5.60 (2.40)	5.71 (2.75)	5.25 (2.88)	-1.15 (3.71)
5)	SMART formulating of the expected results in consultation with the patient	4.49 (2.19)	4.44 (2.33)	4.57 (2.39)	4.80 (2.61)	4.51 (2.68)	0.03 (3.71)
6)	Clearly formulating the planned actions in consultation with the patient	6.08 (2.02)	5.83 (2.49)	5.70 (2.35)	5.64 (2.75)	5.05 (3.03)	-1.03 (4.09)
Total Average Score		6.00 (1.69)	5.68 (2.11)	5.49 (2.37)	5.56 (2.59)	5.11 (2.81)	-0.89 (3.69)

Table 3: Mean and change scores of participants on the six items of the self-assessment during 5 monthly measuring moments in between tracer cycles 1 and tracer cycles 2, on a scale from 1 to 10

The correlation between the scores on the used feedback list during the tracer (T1-T0) and the self-assessment scores on the monthly sent list (T5-T1) was very low (r=0.03, p=0.89).

Qualitative evaluation
Analysing the group interviews for perceived impact on professional development, two themes were identified: 'Peer feedback' and 'Learning outcome'.

Peer feedback
Participants mentioned the importance of group composition. Respondents expressed different views on whether peer feedback should be carried out with colleagues from the same or different specializations, or on whether the goal of peer observation and feedback is learning in breadth or depth. Participants were convinced of the added value of peer feedback for quality improvement. They also indicated that mandatory assessment instead of peer feedback would harm the professional development process.

> *"We sometimes put pelvic physiotherapists and paediatric physiotherapists together and they can ask each other stupid questions. The fact that you can ask stupid questions makes you think differently about your actions. Could be pretty useful." (PT30)*

> *"What fascinates me is the peer feedback, the methodical way of acting, which in terms of content is more focused on the profession. That makes me curious. Professional content that you can talk about, how do you do that, and then you can share the knowledge that someone else possesses but you haven't yet." (PT03)*

The most commonly mentioned learning effect was self-reflection and awareness. The opportunity to see a colleague from another hospital at work was perceived as very useful. Although it was regularly mentioned that this was a unique opportunity to learn, it was also indicated that too much repetition of the method could lead to saturation. It was stated that the suggestion of assessment can have a negative effect and motivation and that training in feedback skills are important prerequisites.

> *"And we concluded that we were all lacking a little in giving information about a treatment beforehand." (PT16)*

> *"We are probably all open to feedback because we volunteer for it. Maybe giving feedback is not perfect, but you also have people who may not have signed up, who cannot or do not want to receive feedback. Then it is nice to know how best to give feedback, instead of saying "hey, you're doing it wrong." (PT21)*

Barriers and facilitators (feasibility) of the program

Quantitative evaluation

For the barriers and facilitators (feasibility) of the quality improvement program, participants scored on a scale from 1 (completely disagree) to 5 (completely agree), a mean of 3.45 (SD 0.95) on determinants of innovation, 3.47 (SD 0.86) on probability to use, and 2.63 (SD 1.07) on the user feedback list (table 4).

	Mean (SD)
Determinants of Innovation	**3.45 (0.95)**
The tracer communication with the patient clearly indicates which activities I have to perform in which order	3.28 (0.97)
The tracer communication with the patient is based on actually correct knowledge	3.10 (0.81)
The tracer communication with the patient offers all the information needed to work well with	2.88 (0.99)
Application of the tracer communication with the patient is easy to understand for me	3.45 (0.87)
The tracer communication with the patient is a good fit with how I am used doing my work	3.22 (1.09)
I think the effects of using the tracer communication with the patient are clearly visible	3.10 (1.01)
I think the tracer communication with the patient is suitable for my colleagues	3.24 (1.16)
Application of the tracer communication with the patient helps to improve my quality of communication with the patient	3.56 (0w99)
I think it is important that my quality of communication with the patient improves	4.10 (0.84)
I think it is part of my job as a hospital-based physiotherapist to perform the tracer communication with the patient	3.58 (0.93)
Patients benefit from the usage of the tracer communication with the patient	3.46 (1.01)
Colleague hospital-based physiotherapists will generally cooperate when the tracer communication with the patient is applied	3.52 (0.65)
I can rely upon sufficient support from my management/supervisor when using the tracer communication with the patient	3.88 (0.72)
I have sufficient knowledge to be able to carry out the tracer communication with the patient	3.90 (0,54)
The activities in the tracer communication with the patient fit with the existing KNGF guidelines	3.38 (0.67)

Probability to use	**3.47 (0.86)**
I am satisfied with the tracer communication with the patient	3.14 (0.88)
I intend to use this system of tracer communication with the patient more often	3.06 (0.87)
This tracer communication with the patient is suitable for use in daily practice	3.26 (1.05)
The tracer communication with the patient fits within our organization	3.46 (0.93)
I experience a positive effect of this tracer communication with the patient	3.68 (0.68)
This method of tracer communication with the patient meets a need	3.30 (0.76)
This method of tracer communication with the patient can be learned quickly	3.90 (0.62)
I felt competent enough to perform this tracer communication with the patient	4.00 (0.53)
User Feedback List during Tracer	**2.63 (1.07)**
I think the feedback list quality of communication with the patient is particularly useful	2.70 (1.11)
The questions in the feedback list quality of communication with the patient were all relevant	2.38 (1.03)
The feedback list quality of communication with the patient is a powerful feedback tool	2.80 (1.05)

Table 4: Scores on the barriers and facilitators (feasibility) questionnaire (n = 50)

During 18 tracers, in which influence of the visiting physiotherapist on the observed physiotherapist's treatment behavior was scored, a mean influence of 2.61 (SD 2.23) was recorded.

Qualitative evaluation

In eight group interviews, participating hospital-based physiotherapists discussed their views on the tailor-made quality improvement program. Template analysis resulted in three main themes: 'Organisation', 'Tracer', and 'Tracer feedback list'.

Organisation

Most participants felt that the quality improvement program could be organized more efficiently, with clear instruction in advance, supervision by the coach, and support by the department's manager. They argued that although only a few physiotherapists participated in the program, it still put a burden on the entire team.

> *"Sometimes it can suddenly be about something that we as physiotherapists find interesting, but then you don't reach the goal of the intervision. And then it is useful if there is somebody who can steer the process a bit." (PT34)*
>
> *"It's quite a burden on the whole team. There are four of us gone now. And I know my colleagues are struggling to deal with the patient load." (PT12)*

Tracer

All participants emphasized the value of using the tracer methodology as it gave a realistic insight into the daily practice of the observed physiotherapists. Because hospital-based physiotherapists are accustomed to regularly being watched by trainees or employees, they experienced the tracer as creating a safe learning environment allowing prompt feedback. Respondents recognized that the presence of an observer slightly altered their usual work situation.

> *"It's very direct and safe at the same time. It all becomes very real and because the group is this size, it is pleasant to do." (PT38)*
>
> *"And even though you know what is being judged, you forget that there is someone there. The fact that she was standing there to "judge" me, you just forget. I was busier with my patient, how she was doing, and what was going on with her than I was with my colleague observing what I was doing. On the one hand, it has to do with the fact that you are going to act the way you normally act and on the other hand it has to do with the pressure of work." (PT48)*

Tracer feedback list

Participants viewed the tracer feedback list as an applicable instrument and as a good guide for the tracer, although some remarked that the list should be filled out after completing the tracer. The biggest point of criticism regarding the tracer feedback list was its incompleteness because it did not cover all aspects of patient communication. Specifically, aspects of non-verbal communication were missing, such as considering the status of consciousness of the patient in, for example, the intensive care or neurology department. Comments were also made that the list could be a more convenient step-by-step guide, with better use of keywords, explanation of abbreviations used, and use of the concept of treatment goal instead of request for help.

"Such a form is a nice guide, a kind of format, but I would still like to see it worded differently. More specifically, that you have more of a list where you can tick some boxes." (PT27)

"The form is an example. It is not an assessment form. It does not lead to a score. It should lead to feedback. It is a means to get feedback. If that is not enough, you have to do it another way." (PT28)

DISCUSSION

Major findings

This study shows that a tailor-made quality improvement program for hospital-based physiotherapists on patient communication has an impact on professional development. Participation in the program was associated with a statistically significant increase in reported patient communication quality. This improvement was seen in five aspects of patient communication: the patient's request for help, findings, outcomes, expectations, and action planning. The presence of an observer during the tracer appeared to have almost no influence on the natural treatment behavior of the participants, so there seems to be indication that normal treatment behavior was observed during the tracer. Most participants were convinced of the added value of peer observation and feedback, through self-reflection and awareness.

The quantitative data on the MIDI questionnaire indicates that the offered quality improvement program is in general feasible, where the used feedback list appears to be the largest barrier to using the program. Important facilitators for the program are a clear instruction in advance, supervision by a coach, and support by the manager of the department.

Because the quality improvement program consisted of two interrelated parts, tracer methodology and a monthly self-reflection-questionnaire, it is hard to say which of these two interventions contributed to what amount to the results of the study. The very low correlation between the scores on the used feedback list and the self-assessment list, which we cannot properly explain at the moment, makes this point even more difficult to interpret.

Relation with similar studies

Comparing this study with equivalent studies in the literature is difficult because research on peer review is fragmented and has been limited to small-scale projects. Peer assessment and feedback (where we also include the use of the tracer method, on the understanding that the latter is then used formative rather than summative as is customary) on professional performance can be provided in several ways with different effects.[26] Two RCTs showed that peer assessments were significantly more effective than group discussions in improving quality and in contributing to self-awareness among professionals.[27,28] In agreement with the results of this study, an evaluation of a peer group model of supervision

amongst allied health care workers reported improved skill development.[29] Also, in a primary care setting, both self-and peer assessments were shown to be effective in improving the physiotherapist's clinical performance.[30] In line with our findings, experienced physiotherapists perceived, observing colleagues while doing their job, to be the most powerful learning process that enabled them to develop their clinical expertise further.[31] The results of this study thus support and extend previous findings of the potential value of peer observation and feedback as a quality improvement strategy.[32]

A meta-review of Ivers et al. showed that feedback is more effective if the source is a colleague or supervisor, if it is given more than once, if the feedback is provided both in writing and orally and if it contains concrete goals and an action plan.[33] Although in our study feedback was only given once, compliance with these other features of effectiveness was met. It was also important that the feedback was provided by a licensed colleague from another hospital. Studies of feedback acceptance and its impact on subsequent professional development showed that feedback is better accepted and used if the provider is considered reliable and credible by the feedback recipient.[34,35] In general, peer observation and feedback are seen as an innovative concept with the potential to use as a strategy for continuing professional development, where creating a feasible program and a supportive environment to be able to do this properly, is challenging.[36-40] Especially these two findings are emphasized by our study.

Meaning and relevance of the findings

In our study we observe an improvement of 7.6%, from 3.99 to 4.32 on the used scale, which is higher than the 4.3% that is found on average for audit and feedback effects.[33] These findings of the impact of a quality improvement program on patient communication are of significance for national boards of physiotherapy and other stakeholders in physiotherapy services. The results show that a tailor-made quality program for hospital-based physiotherapists stimulates the development of their professional competence. Key component of the feasibility and relevance of this program is that it is easy to apply in hospitals because it is linked to the tracer methodology that is already known in most hospitals.

Strengths and limitations of the study

Although exact figures and characteristics about the approximately two thousand hospital-based physiotherapists working in the Netherlands are lacking, it is the opinion of the board of the Dutch Association for Physiotherapy in Hospitals (NVZF), based on their knowledge and experience of contacting Dutch hospitals, that the participants in this study, covering approximately a fifth of all hospitals in the Netherlands, are representative of the overall hospital-based physiotherapy workforce. Whether the findings are also generalisable to hospital-based physiotherapists in other countries should be explored in further studies. Granting potential members of the target group an important role in the development

process of the quality improvement program by joint scoring and evaluating, assures that updating the program with their data will result in a more successful program. Research has shown that this sort of bottom-up quality improvement initiatives might hold better and more sustainable results than external, top-down regulations.[41-43] This is because shared social and professional norms are important predictors of behavior change.[44-45] The use of a mixed-methods design also adds value to this study: using the qualitative results clarifies the quantitative results of the study.[46]

A key limitation of the study is that neither the used feedback list during the tracer rounds or the self-reflection list have been formally tested for reliability and validity. Also, participants criticized some points of the used feedback list, which may affect its validity to some extent. Furthermore, the eight conducted group interviews were not anonymous, participants may have felt restrained to speak freely or one individual's opinion can be overrepresented. And voluntary participation (motivated participants) may distort the results. Also, the observed improvement in patient communication skills was only based on participating physiotherapists' assessing each other and themselves and may therefore have been subject to social desirability bias. Bias could also have occurred due to the impact of the impossibility of blinding the assessment.

Suggestions for further research

The feedback and self-assessment forms used in the study should be further adjusted and tested in a follow-up study for their clinimetric properties. To discover whether and in what amount the used tracer methodology or the monthly self-assessment list was responsible for the positive test results, the effect of both should be further investigated separately and in combination, of which examples can already be found in the literature.[47,48] Further studies using independent and more objective assessment of communication skills are needed to substantiate our findings

Conclusion

A tailor-made quality improvement program for patient communication of hospital-based physiotherapists showed a significant and relevant impact on participants' communication skills through self-reflection and awareness. Barriers and facilitators of the program as determinants of feasibility showed the program being feasible.

On the qualitative components, this study was reported following the consolidated criteria for reporting qualitative research (COREQ).[49] The entire study was reported following SQUIRE 2.0 (Revised Standards for Quality Improvement Reporting Excellence).[50]

Appendix 1; Tracer Feedback List

Quality Indicators		
1	Has the question for help been clarified, provided the patient is aware of it? If not: has the physiotherapist formulated the question for help from the referral to the patient in an understandable way, taking the patient's condition into account?	
2	Are the findings from the research and the physiotherapeutic diagnosis formulated understandably for the patient, taking his condition into account?	
3	Have the patient-reported outcomes (PROMs) been used to draw up the treatment plan in consultation with the client, taking the client's condition into account?	
4	Are mutual expectations in line with the patient's condition? If not: has coordination on this matter taken place on a multidisciplinary basis?	
5	Have the expected results (objectives) of the treatment been formulated SMART and in consultation with the patient, taking the patient's condition into account?	
6	Are the planned actions formulated in consultation with the patient, taking the patient's condition into account?	
7	Are possible disruptive environmental stimuli sufficiently considered when communicating with the patient?	
8	**Space for additional comments**	

Evaluation criteria: n.a. = not present, 1 - 5: shifting scale from 1 = much improvement needed to 5 = no improvement needed. If improvement is needed, concrete suggestions for improvement will be given.

	Score						Feedback and suggestions for improvement
	1	2	3	4	5	n.a.	
	o	o	o	o	o	o	
	o	o	o	o	o	o	
	o	o	o	o	o	o	
	o	o	o	o	o	o	
	o	o	o	o	o	o	
	o	o	o	o	o	o	
	o	o	o	o	o	o	

Appendix 2; Topic List Interviews

Patient Communication

1. How did you experience the feasibility of the program (tracer plus feedback list)?
2. How is this method of quality improvement experienced?
3. Which suggestions do exist to improve this method of quality improvement?

Tracer Days

1. How were both days of peer observation and feedback experienced in general?
2. In general, what could be improved about the way peer observation and feedback was applied?

References

1. Donabedian, A. The Definition of Quality and Approaches to Its Assessment. Vol 1. Explorations in Quality Assessment and Monitoring. Ann Arber, MI, Health Administration Press; 1980
2. American Physiotherapy Association. (2003). *Guide to Physiotherapist Practice, Rev 2nd Ed* (Revised Second edition). Amer Physiotherapy Association. https://doi.org/10.2522/ptguide3.0_978-1-931369-85-5
3. Canadian Alliance of Physiotherapy Regulators, Canadian Council of Physiotherapy University Programs, Canadian Physiotherapy Association, & Physiotherapy Education Accreditation Canada. (2017). *Competency Profile for Physiotherapists in Canada (2017)*. National Physiotherapy Advisory Group. https://physiotherapy.ca/sites/default/files/competency_profile_final_en_0.pdf
4. Chartered Society of Physiotherapy. (2012). *Quality Assurance Standards for Physiotherapy Service Delivery*. https://www.csp.org.uk/system/files/csp_quality_assurance_standards.pdf
5. Physiotherapy Board of New Zealand. (2018). *Physiotherapy Standards Framework*. https://www.physioboard.org.nz/wp-content/uploads/2018/03/Physiotherapy-Board-Code-Standards-Thresholds.pdf
6. Physiotherapy Board of Australia. (2020). *Codes and Guidelines*. Accessed: August 10th, 2020 https://www.physiotherapyboard.gov.au/Codes-Guidelines.aspx
7. Klazinga, N., Lombarts, K., & van Everdingen, J. (1998). Quality management in medical specialities: the use of channels and dikes in improving health care in The Netherlands. *The Joint Commission Journal on Quality Improvement*, *24*(5), 240–250.
8. Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*. https://doi.org/10.1097/00001888-199009000-00045
9. College voor de Beroepen en Opleidingen in de Gezondheidszorg, & Scherpbier, P. A. (2008). *Eindrapportage Projectgroep Kwaliteitsindicatoren*. College voor de Beroepen en Opleidingen in de Gezondheidszorg. https://adoc.tips/queue/eindrapportage-projectgroep-kwaliteitsindicatoren-olv-prof-d.html
10. Williams, B. W., Byrne, P. D., Welindt, D., et al. (2016). Miller's pyramid and core competency assessment: A study in relationship construct validity. *Journal of Continuing Education in the Health Professions*. https://doi.org/10.1097/CEH.0000000000000117
11. Koninklijk Nederlands Genootschap voor Fysiotherapie. (2019). *Beleidsdocument Kwaliteitsregister Fysiotherapie NL*. https://www.kngf.nl/binaries/content/assets/kngf/onbeveiligd/krf/beleidsdocument-krf-nl-vastgesteld-kngf-bestuur-20112019.pdf
12. De Vries, C., Hagenaars, L., Kiers, H., et al. Beroepsprofiel Fysiotherapeut. Amersfoort, NL: Koninklijk Nederlands Genootschap voor Fysiotherapie; 2014.
13. Euwes M, Engelbert RHH, Geleijn E, et al. Beroepscompetentieprofiel ziekenhuisfysiotherapeut. Amersfoort, NL: NVZF; 2010
14. Maas MJM, Nijhuis van der Sanden MWG, Driehuis F, et al. (2017) Feasibility of peer assessment and clinical audit to self-regulate the quality of physiotherapy services: a mixed-methods study. BMJ Open 2017;7: e013726. https://doi.org/10.1136/bmjopen-2016-013726
15. The Joint Commission. The joint commission big book of policies and procedures for hospitals. Vol 1.

Oak Brook, Ill: Joint Commission Resources 2019.
16. https://accreditation.ca/intl-en/accreditation/qmentum/ ; date accessed: April 29th, 2020.
17. Greenfield, D., Travaglia, J., Braithwaite, et al. Unannounced Surveys and Tracer Methodology: Literature Review. Sydney: Centre for Clinical Governance Research in Health, Faculty of Medicine, University of New South Wales; 2007
18. Hinchcliff H, Glennie M, Travaglia J, et al. Patient Journey and Tracer Methodology: Literature review. Sydney: ACSQHC; 2017.
19. Azami-Aghdash, S. Mohammadi, R. (2013). Using Tracer Methodology in Clinical Setting and Research to Measure and Improve Quality. *Journal of Clinical Research & Governance*. (2013) 39-40
20. Bowen, D. J., Kreuter, M., Spring, B., et al. (2009). How We Design Feasibility Studies. *American Journal of Preventive Medicine*, *36*(5), 452–457. https://doi.org/10.1016/j.amepre.2009.02.002
21. Fleuren, M., Wiefferink, K., & Paulussen, T. (2004). Determinants of innovation within health care organizations Literature review and Delphi study. International Journal for Quality in Healthcare, 16(2), 107–123.
22. Fleuren, M. A. H., Paulussen, T. G. W. M., Dommelen, P. van, et al (2014). Meetinstrument voor Determinanten van Innovaties (MIDI). International Journal for Quality in Health Care, 26(5), 501–510. https://doi.org/10.1093/intqhc/mzu060
23. Fleuren, M. A. H., Paulussen, T. G. W. M., Van Dommelen, P., et al (2014). Towards a measurement instrument for determinants of innovations. International Journal for Quality in Health Care, 26(5), 501–510. https://doi.org/https://doi.org/10.1093/intqhc/mzu060
24. Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, *42*(8), 846–854. https://doi.org/10.1080/0142159x.2020.1755030
25. Friese S. Qualitative Data Analysis with ATLAS.ti. London, Sage Publications Ltd; 2012.
26. Grimaldo F, Marusˇić A, Squazzoni F (2018) Fragments of peer review: A quantitative analysis of the literature (1969-2015). PLoS ONE 13(2): e0193148. https://doi.org/10.1371/journal. pone.0193148
27. van Dulmen, S. A., Maas, M., Staal, J. B., et al (2014). Effectiveness of peer assessment for implementing a Dutch physiotherapy low back pain guideline. *Phys Ther*, *94*(10), 1396–1409. https://doi.org/10.2522/ptj.20130286
28. Maas, Marjo, J., van der Wees, P., Braam, C., et al (2015). An innovative peer assessment approach to enhance guideline adherence in physiotherapy: a single-masked, cluster-randomized Controlled trial. *Physiotherapy*, *95*(4), 600–612
29. Pager SC, Kuipers P, Bell K, et al. Evaluation of a Peer Group Model of Supervision for the Allied Health Workforce in Queensland: A descriptive overview. The Internet Journal of Allied Health Sciences and Practice. 2018 Apr 05;16(2), Article 5.
30. Maas, M. J. M., Driehuis, F., Meerhoff, G. A., et al. (2018). Impact of Self- and Peer Assessment on the Clinical Performance of Physiotherapists in Primary Care: A Cohort Study. *Physiotherapy Canada*, *70*(4), 393–401. https://doi.org/10.3138/ptc.2017-40.pc
31. Petty NJ, Morley M (2009) Clinical expertise: learning together through observed practice. *Manual Therapy*, *14(5)*, 461-62.
32. Morley M, Petty NJ (2010) Developing an observed practice programme for occupational therapists and physiotherapists: reporting the first phase of an action research study. *British Journal of*

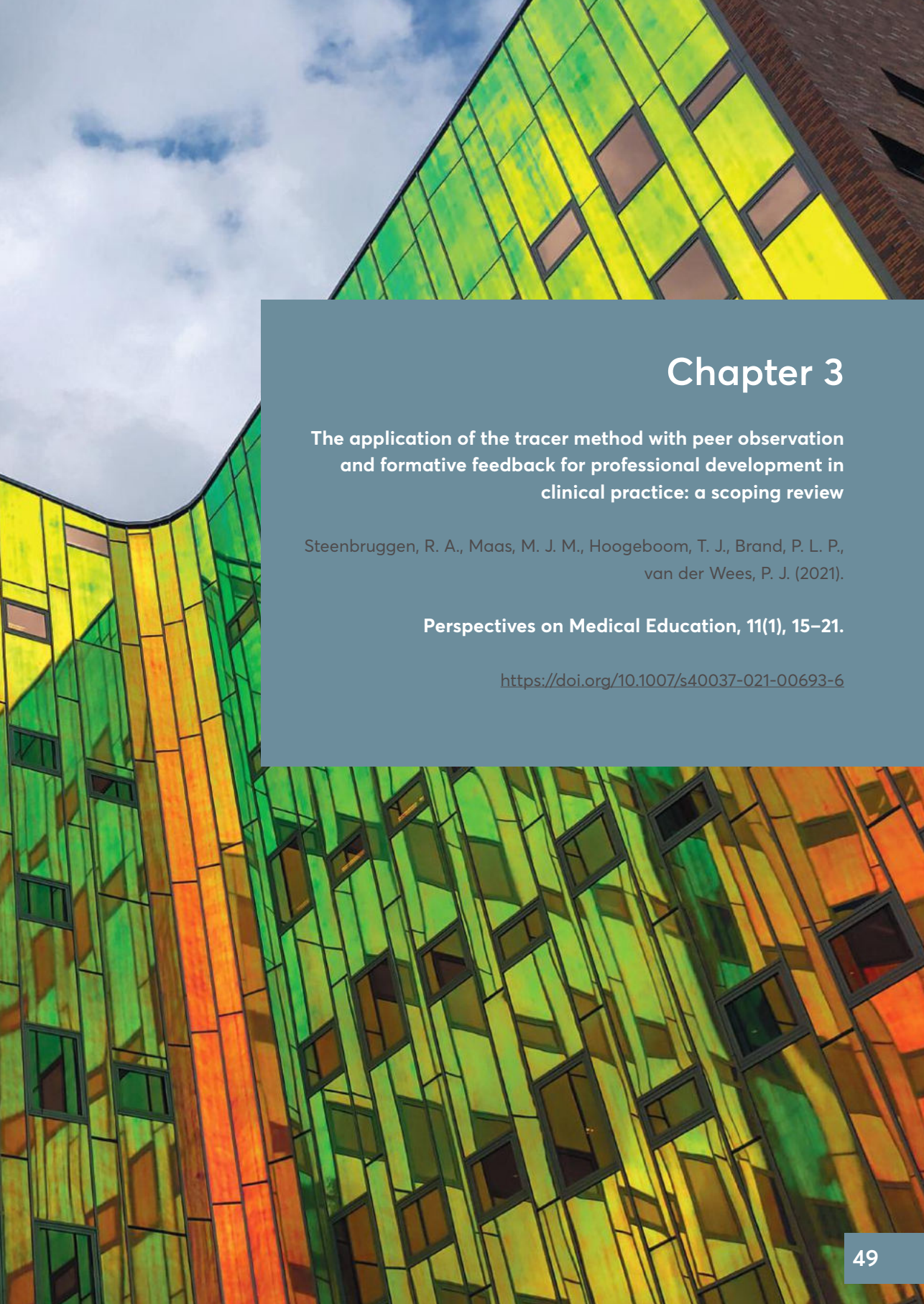
Occupational Therapy,73(8), 379-387.

33. Ivers, N., Jamtvedt, G., Flottorp, S., et al (2012). Audit and feedback: effects on professional practice and healthcare outcomes. In Cochrane Database of Systematic Reviews. https://doi.org/10.1002/14651858.CD000259.pub3
34. Payne, V. L., & Hysong, S. J. (2016). Model depicting aspects of audit and feedback that impact physicians' acceptance of clinical performance feedback. BMC Health Services Research, 16(1). https://doi.org/10.1186/s12913-016-1486-3
35. Sargeant, J., Lockyer, J., Mann, K., et al (2015). Facilitated Reflective Performance Feedback: Developing an Evidence-and Theory-Based Model That Builds Relationship, Explores Reactions and Content, and Coaches for Performance Change (R2C2). *Academic Medicine*, *90*(12), 1698–1706. https://doi.org/10.1097/ACM.0000000000000809
36. Bhansali, P., & Goldman, E. (2017). A novel peer feedback programme of family-centred rounds. *The Clinical Teacher*, *15*(6), 478–482. https://doi.org/10.1111/tct.12742
37. Blumenthal, S., Musche-Ambrosius, I., Reicherdt, I., et al. (2019). *German College of General Practitioners and Family Physicians: Mutual Learning Process by Practice Shadowing,* Deutscher Ärzteverlag ZFA Z Allg Med, *95(2), 70-74*
38. Borus, J., Pitts, S., & Gooding, H. (2017). Acceptability of peer clinical observation by faculty members. *The Clinical Teacher*, *15*(4), 309–313. https://doi.org/10.1111/tct.12681
39. Lalleman, P., Bouma, J., Smid, G., et al. (2017). Peer-to-peer shadowing as a technique for the development of nurse middle managers clinical leadership. *Leadership in Health Services*, *30*(4), 475–490. https://doi.org/10.1108/lhs-12-2016-0065
40. McDaniel, C. E., Singh, A. T., Beck, J. B., et al. (2019). Current Practices and Perspectives on Peer Observation and Feedback: A National Survey. *Academic Pediatrics*, *19*(6), 691–697. https://doi.org/10.1016/j.acap.2019.03.005
41. Grol R. Quality improvement by peer review in primary care: a practical guide. *Qual Health Care* 1994;3:147–52 https://doi.org/10.1136/qshc.3.3.147
42. Butterfield R, McCormick B, Anderson R, et al. Quality of NHS care and external pathway peer review. 2012. Available at: https://www.chseo.org.uk/downloads/report3-peerreview.pdf. Date accessed 10th June 2019)
43. Pronovost PJ, Hudson DW. Improving healthcare quality through organisational peer-to-peer assessment: lessons from the nuclear power industry. *BMJ Qual Saf* 2012; 21:872–5. https://doi.org/10.1136/bmjqs-2011-000470
44. Prochaska JO, Redding CA, Evers KE. Health behavior and health education. Hoboken NJ; Wiley & Sons 2008:97–121.
45. Ajzen I. Nature and operation of attitudes. *Annu Rev Psychol* 2001; 52:27–58 https://doi.org/10.1146/annurev.psych.52.1.27
46. Hadi, M. A., & Closs, S. J. (2015). Applications of mixed-methods methodology in clinical pharmacy research. *International Journal of Clinical Pharmacy*,635–640. https://doi.org/10.1007/s11096-015-0231-z
47. Pelgrim, E. A. M., Kramer, A. W. M., Mokkink, H. G. A., et al. (2010). In-training assessment using direct observation of single-patient encounters: a literature review. *Advances in Health Sciences Education*, *16*(1), 131–142. https://doi.org/10.1007/s10459-010-9235-6

48. Kramer, A. W. M., Dusman, H., Tan, L. H. C., et al. (2004). Acquisition of communication skills in postgraduate training for general practice. *Medical Education*, *38*(2), 158–167. https://doi.org/10.1111/j.1365-2923.2004.01747.x

49. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interview and focus groups. *Int J Qual Health Care* 2007;19(6):349–357 https://doi.org/10.1093/intqhc/mzm042

50. *SQUIRE | HOME PAGE*. (2015, 15 September). Revised Standards for Quality Improvement Reporting Excellence, SQUIRE 2.0. http://squire-statement.org/



Chapter 3

The application of the tracer method with peer observation and formative feedback for professional development in clinical practice: a scoping review

Steenbruggen, R. A., Maas, M. J. M., Hoogeboom, T. J., Brand, P. L. P., van der Wees, P. J. (2021).

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ABSTRACT

Introduction: The tracer method, commonly used for quality assessment, can also be used as a tool for peer observation and formative feedback on professional development. This scoping review describes how, by whom, and with what effect the tracer method is applied as a formative professional development instrument between healthcare professionals of equal status and aims to identify the types of scientific evidence for this use of the tracer method.

Methods: The authors searched four electronic databases for eligible articles, which were screened and assessed for eligibility by two independent researchers. From eligible studies, data were extracted to summarize, collate, and make a narrative account of the findings.

Results: The electronic search yielded 1757 unique studies, eight of which were included as valid and relevant to our aim: five qualitative, two mixed methods, and one quantitative study. Seven studies took place in hospitals and one in general practice. The tracer method was used mainly as a form of peer observation and formative feedback. Most studies evaluated the tracer method's feasibility and its impact on professional development. All but one study reported positive effects: participants described the tracer method generally as being valuable and worth continuing.

Discussion: Although the body of evidence is small and largely limited to the hospital setting, using the tracer method for peer observation and formative feedback between healthcare professionals of equal status appears sufficiently useful to merit further rigorous evaluation and implementation in continuous professional development in healthcare.

Keywords: Learning environment; Learning style; Evaluation

Introduction

The tracer method was introduced in 1973 as a tool to assess the quality of care provided in a healthcare system.[1] Over the years, the tracer method has gained increasing worldwide popularity as an evaluation and assessment method to document a patient's experience, a healthcare process or product, resulting in both summative and formative feedback for accreditation of health services.[2-5] Carrying out this form of auditing is associated with improved patient experiences and observed safety on hospital wards, with no adverse outcomes on safety culture and team climate.[6] It has been proposed that the tracer method could also be a useful strategy to support continuous professional development of healthcare professionals in clinical practice.[7,8] During a tracer, a professional quality assessor or peer assessor (colleague of equal status) observes a healthcare professional during daily practice and provides feedback on a number of pre-established indicators.[9] Using the method in this way can be viewed as a form of peer observation and formative feedback. A systematic review provides theoretical support for the use of audit and feedback in professional practice and healthcare, by showing that feedback is more likely to be effective if the feedback provider is a supervisor or a colleague, and when it is provided more than once, delivered in verbal and written formats, and when it includes explicit targets and an action plan.[10] However, a thorough overview of the evidence of the effects of the tracer method with peer observation and merely formative feedback, carried out by a colleague of equal status, primarily focused on continuous professional development purposes in healthcare, is lacking. Recent reviews of the tracer method in healthcare quality management found little evidence of using the tracer method outside the scope of accreditation of health service organizations.[8,9] Thus, we conducted this scoping review based on the following research question: How, by whom, and with what effect is the tracer method with peer observation and formative feedback applied as an instrument for professional development of healthcare professionals?

Method

We conducted a scoping review according to the guidance of Arksey and O'Malley, Levac, Grant, and the JBI Guide for scoping reviews.[11-14] The first and second author conducted all the steps of the review, the others critically appraised the research process and provided feedback. Following the methodological framework of conducting a scoping review, every next step was only taken after achieving consensus by the whole research team. We report our findings in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR).[15] During the first stage, the key aspects of the study objective were translated into the research question as described. The research question guided the search strategy and the following steps of the review.

In January 2020, with an update in January 2021, we searched four databases (CINAHL, Cochrane, Embase and MEDLINE) from the inception, in collaboration with a university librarian, using the search terms along with their most important synonyms and alternative

definitions, as generated from the research question (See Appendix 1 for the full search strategies).

We searched Google Scholar for grey literature in February 2020 limiting our inclusion to the first 100 hits, because the relevance of retrieved studies declined sharply afterwards. In addition, we asked JCI, Qmentum (the two global market leaders on identifying, measuring, and sharing best practices in quality and patient safety in hospitals) and an expert in the field (P. Lalleman, the Netherlands) what they considered to be the most important literature on the topic.

Articles were screened on relevance by title and abstract by two independent reviewers (RS and MM), using prespecified inclusion and exclusion criteria. As peer observation programs globally do not always refer to the tracer method, we transformed our comprehensive set of relevant terms into an extensive set of criteria. Only studies with full text available were included if (a) healthcare professionals, peers or colleagues were the subject of the study; (b) when shadowing, tracing, direct observation, feedback peer review and/or peer evaluation was used, and (c) where the purpose was development of competencies, performance and/or quality improvement. Studies with an English abstract and the main text in German, French or Spanish were also included using translation software. Studies were excluded if they took place in an educational setting, if simulation, masked/secret observation and/or video observation was used, where there was a dependent or hierarchical relationship between observer/feedback provider and the observed healthcare professional/feedback recipient, and where the purpose was an audit, certification, assessment and/or examination.

These criteria were chosen to ensure inclusion of studies with a formative purpose (i.e., aiming at continuous professional development or performance improvement) by healthcare professionals. Studies on the use of the tracer method for accreditation purposes or for summative assessment by a supervisor in a hierarchical relation were excluded.

Differences in opinion of the two reviewers were resolved by discussion, and when needed consensus was obtained by consulting a third research team member. Then, the full text of the selected articles was screened against the inclusion and exclusion criteria independently by the first and second author (RS and MM), and the reasons for excluding articles were recorded. Covidence software was used to support the study selection process.[16]

From the selected articles, the following predefined data were extracted by two reviewers (RS and MM): author(s), year of publication, study location, population, the objective of the study, type of intervention, methodology, results, impact on professional development, perceived barriers and facilitators, and conclusion(s). We did not appraise the quality of the evidence of selected articles, because a scoping review provides a preliminary assessment of the potential size and scope of available research and it aims to identify the nature and extent of research evidence.[13,14]

The extracted data were analyzed based on the research questions, leading to collating, summarizing, and reporting of results. Data from qualitative or mixed methods studies were subjected to thematic analysis, following guidelines from the literature,[17,18] by line-by-line

coding by two reviewers (RS and MM) to identify themes. These were included in the results when consensus was reached between reviewers. If needed, a third research team member was consulted. Types of evidence were classified according to Kirkpatrick's model, a useful method for evaluating training outcomes, consisting of four successive levels of learning effects: reactions, learning, behavior, and results.[19]

We invited all first authors of the included studies to join this panel, in order to discuss and validate our findings and to identify any missing information on the topic. After accepting the invitation, participants in the panel were sent the draft version of the review in preparation, together with a zoom link for the set date and time of the panel meeting. Three authors (PvdW, MM, RS) prepared the panel meeting by drawing up an agenda and a topic list. The meeting was chaired by PvdW and introduced on content by RS. The audio recording of the meeting was transcribed and thematically analyzed by the two first authors (RS and MM). Conclusions thus drawn were sent to participants for a member-check. Convening and consulting the expert panel was exempt from medical ethical review under Dutch law. All panel members participated voluntarily.

Results

We identified 2300 potential studies of which we included eight[20-27] (see Figure 1 and Table 1).

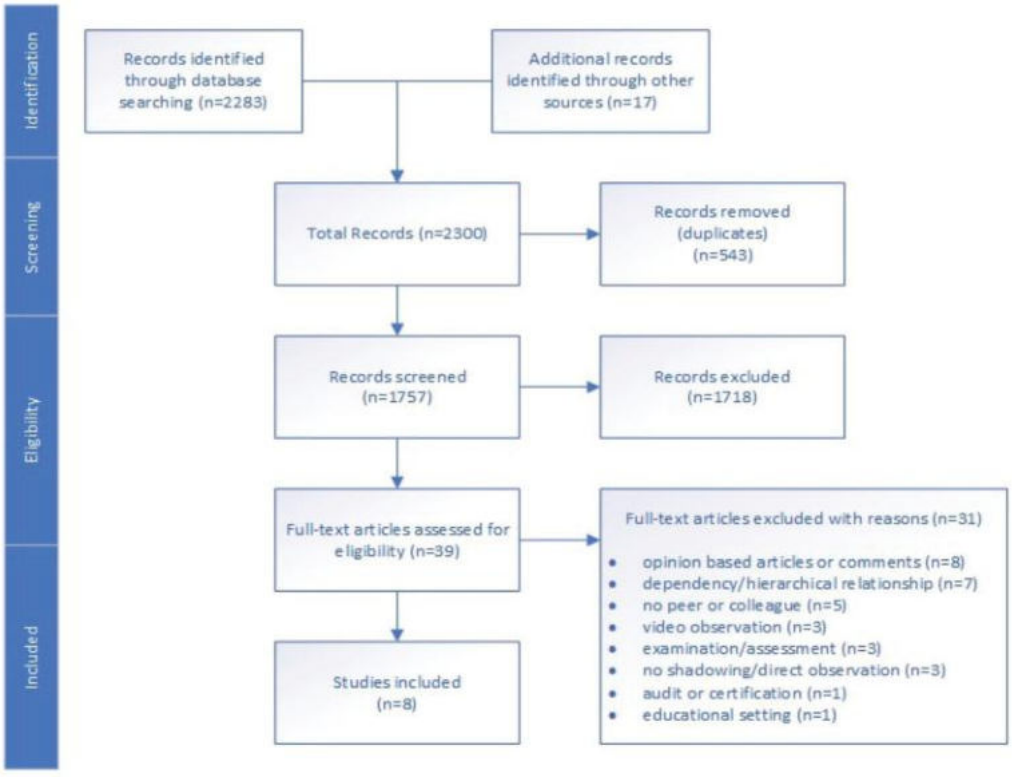


Figure 1; Flow Chart of the selection process

	Reference							
Characteristics	Bhansali (2018)	Blumenthal (2019)	Borus (2018)	Bouma (2012)	Di Rocco (2020)	van Dulst (2016)	Lalleman (2017)	McDaniel (2019)
Study Location								
Hospital	x		x	x	x	x	x	x
General Practice		x						
Country								
USA	x		x		x			
Germany		x						
Netherlands				x		x	x	
Canada								x
Population								
Participants (n)	13	?	8	8	17	?	8	198
Paediatric Hospitalists	x				x			x
Medical Doctors			x					
General Practitioners		x						
Nurse Managers				x			x	
Nurse Practitioners			x					
Healthcare Professionals						x		
Type of Intervention								
Peer Observation and Feedback (POF)	x	x	x		x			x
Purpose of Intervention								
To describe experience with POF	x		x	x				x
To change professional attitude/behaviour		x		x	x			
To investigate impact on learning/development						x	x	
To assess efficacy			x					
To characterize practice of POF								x
To identify preferences of POF								x
Methodology								
Qualitative Design	x	x		x		x	x	
Mixed-Methods			x		x			
Quantitative Design								x
Used methodological Techniques								
Interviews	x			x	x	x	x	
Narrative		x						
Survey/Questionnaire			x	x	x			x
Document study						x		
Observation						x		
Types of evidence (Kirkpatrick)								
Reaction	x	x	x	x	x	x	x	x
Learning	x	x	x	x	x	x	x	
Behaviour		x			x		x	
Results					x			

Table 5; Characteristics of the included studies

All included studies used the tracer method in the form of peer observation and feedback. Three studies used a standardized feedback instrument.[20,21,24] Seven of the eight included studies took place in a hospital,[20,22-27] and one in general practice.[21] Overall, the study population of included studies comprised 228 paediatricians (mainly from one study in which 198 paediatricians participated), five other medical specialists, 16 nursing managers, three specialist nurses and two general practitioners. In these studies, the tracer method was used to assess its use in clinical practice (feasibility) and to assess its impact on professional development (effectiveness). The four feasibility studies described healthcare professionals' experiences with the tracer method as a form of peer observation and feedback.[22,23,26,27]

Five studies applied qualitative research methods (interviews or surveys with open-ended questions),[20,21,23,25,26] two used mixed methods (questionnaires with open and closed questions, and the use of I-PASS - (Illness – Patient – Action – Situation - Synthesis) - mnemonic,[22,24] and one study used quantitative data (survey with questions scored on a Likert scale).[27]

The effectiveness studies aimed to evaluate the change in professional attitude or behavior (*n*=3)[21,23,26] or to investigate whether the instrument used impacted learning and development (*n*=2).[21,26] Secondary study aims included investigating the efficacy of the method, characterizing the practice of peer observation and feedback, and identifying preferences for the use of the method.

All the studies but one reported positive perceived effects: participants described the tracer method as being valuable (*n*=6)[20,22-24,26,27] and worthy of being repeated (*n*=2),[22,24] as an innovative, interesting and effective training supporting professionals' ongoing learning (*n*=2),[21,22] as a tool to strengthen the work culture/collectivity (*n*=2),[22,26] as a promoter of growth through collaboration (*n*=2)[23,24] and as an instrument to stimulate an investigative attitude among professionals (*n*=2).[23,26] One study concluded that the application of the tracer method did not lead to strong learning effects.[25]

One study, covering all four levels of Kirkpatrick's model, concluded that direct peer observations with feedback strengthened the workplace culture, promoted growth through collaboration, and allowed acceptance and success of future projects involving peer observations and feedback.[24] Two studies covered three levels from reactions to behavior,[21,26] most studies examined only the first two levels of reactions and learning,[20,22,23,25] and one study covered only the level of reactions.[27]

Thematic analysis of qualitative data from qualitative studies

Regarding feasibility, we identified five analytical themes: learning, incentives, safety of learning environment, perceptions, and conditions. All these themes can be regarded as either a facilitator or a barrier to the feasibility of the tracer method, finally having impact on its effectiveness on professional development (Fig. 2).

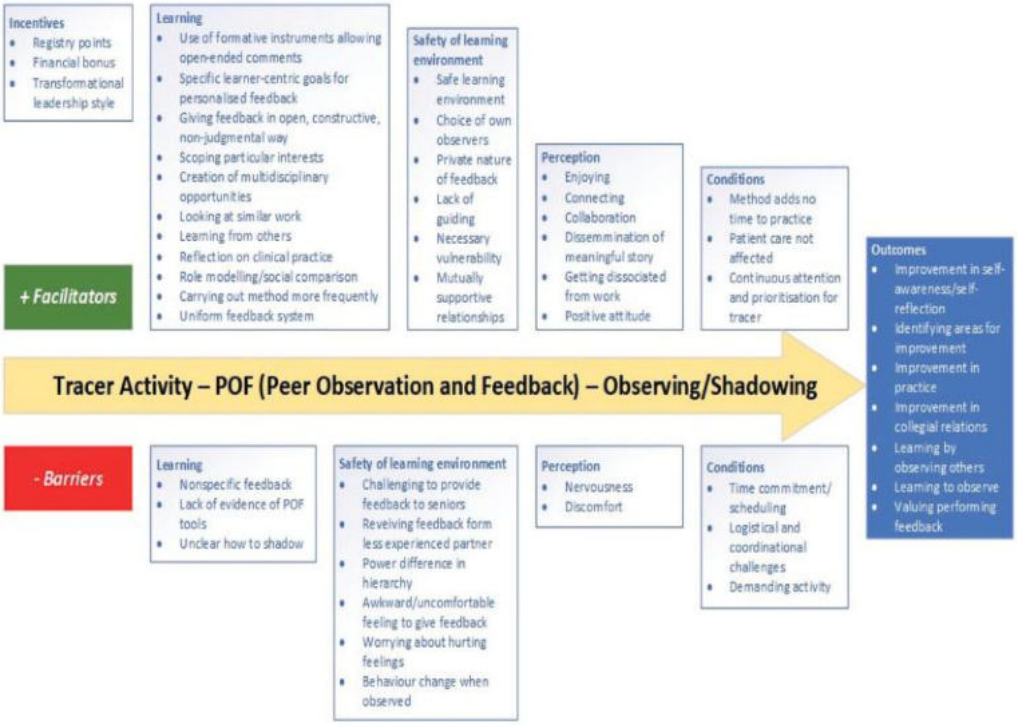


Figure 2; Facilitators and barriers to the feasibility of the tracer method

Most of the comments in the qualitative studies were about learning. Regarding the method, the use of questionnaires allowing for written comments, carrying out the tracer method more frequently, and a uniform feedback system were seen as important facilitators for learning.[20,25] Other perceived advantages of the tracer method as a learning tool included its flexible design depending on personal interests, its ability to create multidisciplinary learning opportunities, and its design, providing space for specific learner-centric goals for personalized feedback.[20,21,25,27] On a more personal level, the art of giving feedback in an open, constructive, non-judgmental way was seen as important.[20,26] Applying the method in daily practice, where it is possible to look at similar work, to reflect on clinical practice, to learn directly from a colleague and to make a social comparison, were noted as important facilitators for learning.[25,27] Perceived barriers in using the tracer method for learning were the provision of nonspecific feedback, uncertainty about the implementation of the method, and the absence of evidence on its usefulness.[23,27]

Incentives, such as a financial bonus or the allocation of continuing education credits for a professional quality register, were viewed as facilitators to participate in a program using the tracer method.[21] Application of a transformational leadership style, in which leaders encourage, inspire, and motivate employees to innovate and create change that will help grow and shape their future success, was also seen as an incentive.[25]

A safe learning environment was considered to be the most important facilitator for successful application of the tracer method. Participants described a safe learning environment as an environment in which the method could be applied with a sense of freedom, without external guidance, with internal observers and feedback offered privately, in a mutually supportive relationship, acknowledging the vulnerability of the traced professional.[20,24,26,27] Perceived barriers included the awkwardness of providing feedback to a colleague, fear of hurting other people's feelings, perceived hierarchal differences between feedback provider and recipient, and the potential of people changing their behavior when being observed.[20,22,27]

A facilitator's positive experience with the tracer method impacted their perception of it and encouraged a more frequent use of the method. Not only a positive attitude towards the method itself and a desire to use it, but also connecting and collaborating with colleagues, getting away from daily work and disseminating a meaningful story were considered important elements in this respect.[23,24,26] We noted nervousness and discomfort to participate in a tracer cycle as barriers for continuing the method.[22,26,27]

The most important condition for successfully applying the tracer method was time management, which could be both a facilitator and a barrier. Conditions were perceived as facilitators when the method did not take more time in practice and did not affect patient care.[22] By contrast, when the method did not fit into regular patient care scheduling and became a demanding activity with logistical and organizational challenges, this was felt to be a barrier for applying it.[20,22-24,26,27] Another condition mentioned as a facilitator was a climate of ongoing attention and prioritization for tracer activity.[25]

Overall, seven positive outcomes of applying the tracer method were noticed in the qualitative studies. Participants reported not only identifying areas for their own professional improvement but commented that this also contributed to improved self-awareness and self-reflection, and to supporting collegial relations.[20-24,26,27] Participants also mentioned learning to observe, learning by observing others, and valuing performing feedback as beneficial outcomes of applying the tracer method.[23,26]

Expert consultation panel

The expert consultation panel consisted of seven participants: four authors of included studies and three authors of this scoping review (RS, MM and PvdW). Overall, participants agreed with the design and the results of the review and believed, linked to their own experiences, that no essential topics were missed. The authors provided feedback to adjust some details of the review, including the representation of the thematic analysis in Fig. 1. Also, the panellists expressed unfamiliarity with the term "tracer method" and suggested to specify this by adding the characteristic "peer observation and feedback", because they believed this to be of key importance in the effective use of the tracer method for continuous professional development.

Discussion

This scoping review shows that the application of the tracer method with peer observation and formative feedback for continuous professional development has been studied mainly in hospital settings to assess its feasibility and impact. In all included studies - five qualitative studies, two mixed methods studies, and one quantitative study - the researchers used the peer observation and formative feedback, by medical specialists and general practitioners, and by nurses and nursing managers. The application of the tracer method addressed all four levels of Kirkpatrick's model (reactions, learning, behavior, results) in only one study. Participants valued applying the tracer method and found it useful for their professional development.

We propose further research should focus on the design and conduct of more extensive, and rigorous studies on the evaluations of the tracer method in continuous professional development in healthcare, especially if the observed facilitators and barriers are sufficiently considered. A good starting point would be to generate more complex evaluation designs resulting in quantitative and qualitative data on the method to gather more robust evidence of its effects. It is conceivable to undertake this research not only in clinical practice but also, for example, in education of healthcare professionals so that already at this stage the basic principles of continuous learning are taught, for which the tracer method with peer observation and formative feedback can be an important basis. Therefore, we argue for tailoring the design and implementation of the instrument to the specific context of healthcare professionals or students. Because direct observation and formative feedback are familiar to most healthcare professionals and students, and the term 'tracer method' has a growing reputation through the use of globally applied quality systems such as JCI and Qmentum, existing knowledge and experience in this field could be applied to use the tracer method as a quality improvement instrument for professional performance as well.

In comparison to the literature, this study demonstrates that only a few studies have examined the tracer method as a tool for direct peer observation and formative feedback, applied in a non-dependent and non-hierarchical relationship and for professional development purposes. It has been shown that direct observation of health professional trainees is valid and representative in assessing a broad spectrum of skills and competencies.[28] However, the literature on such direct observation is potentially influenced by the fact that it is unclear whether the direct observation is intended as assessment (summative assessment) or as a source for formative feedback. A growing body of research suggests that this distinction is crucially important.[29] Particularly also the question of whether the learner (observed) perceives the direct observation and feedback as an exam or as an opportunity to learn and grow. Therefore, we deliberately limited ourselves to studies that described that they were aimed at promoting growth and development (formative) and excluded studies that made summative judgments.

In most studies, the tracer method has been used in the context of quality assessment and as an accreditation tool for healthcare organizations.[20,21,23-27] Other forms of peer observation and feedback, for instance through indirect observation via video, have been used to improve the quality of healthcare, for example in improving hand hygiene and medical administration.[30-34] Our results agree with these findings, and with those of studies on the feasibility of peer observation and feedback in clinical practice.[35,36] Our observation that participants consider the application of the method to be valuable has also been confirmed in two studies.[37,38]

Although Cheung et al. did not mention the tracer method explicitly in their study, they identified key barriers and enablers to direct observation and feedback in clinical practice and proposed that discordant intentions between observers and observed, together with social expectations that the observed should be responsible for ensuring that observations occur, may lie at the root of why direct observation and feedback tend to occur so infrequently in practice.[39] Veloski et al. stated that the effects of formal (summative or formative) assessment and feedback on physician performance are positively influenced by the reliability of the source and duration of the feedback.[40] These barriers and facilitators correspond to our findings. Both the evidence and the experience in the field of graduate and postgraduate medical education highlight the need to distinguish feedback being used to guide learners towards growth and development (formative feedback), from assessment that is being used for summative judgement.[29] The results of our thematic analysis suggest that the same applies to using the tracer method as a tool to promote development of professional competencies.

Our study has several limitations. Although we applied a deliberately sensitive search strategy and consulted experts in the field, a scoping review may always miss relevant studies. Where scoping reviews tend to be used to map more extensive bodies of literature to find gaps in existing knowledge, we found only eight studies that met our inclusion criteria. Thus, our conclusions regarding the scope of our review should be interpreted with caution. Following the recommendations of the methodological framework for scoping reviews, we refrained from methodological appraisal of the included studies, because a scoping review provides a preliminary assessment of the potential size and scope of available research and it aims to identify the nature and extent of research evidence, so that the validity of the retrieved evidence was not formally assessed.[13,14]

Conclusion

Application of the tracer method with peer observation and feedback holds promise as a tool to promote professional development of healthcare professionals because participants value the method to stimulate their learning. Although the evidence is scarce and robust quantitative data are lacking, particularly on the effect of the method on healthcare professionals' behavior, the use of the tracer method as a professional development tool by healthcare professionals of equal status tentatively indicates a potential usefulness of the

tracer method as a quality improvement instrument.
Because the body of evidence is small and largely limited to the hospital setting, the scope for further research in the early stages of this field should be on the design and conduct of further, more extensive, and rigorous studies on the evaluations of the tracer method in continuous professional development in healthcare, especially if the observed facilitators and barriers are sufficiently considered.

Appendix 1; Search strategies for each database on December 30th, 2019.

PubMed

(peer observation[tiab] OR peer clinical observation[tiab] OR direct observation[tiab] OR shadowing[tiab] OR peer feedback[tiab] OR peer assessment[tiab] OR (("Formative Feedback"[Mesh] OR Peer group[Mesh] OR Peer review[Mesh]) AND Observation[Mesh]))

AND
(profession[tiab] OR pro[tiab] OR expert[tiab] OR professionalism[tiab] OR professional behavio*[tiab] OR health personnel[Mesh])

AND
(competenc*[tiab] OR cognizance[tiab] OR cognisance[tiab] OR knowledge[tiab] OR skill*[tiab] OR attitude*[tiab] OR behavio*[tiab] OR "Health Knowledge, Attitudes, Practice"[Mesh] OR behavior[Mesh] OR professional competence[Mesh])

AND
(perception[tiab] OR perceptions[tiab] OR learning[tiab] OR behavioral change*[tiab] OR behavioural change*[tiab] OR quality performance[tiab] OR organizational performance[tiab] OR organisational performance[tiab]OR patient outcome*[tiab] OR professional development[tiab] OR competentional development[tiab] OR competence development[tiab] OR awareness[tiab] OR "Quality of Health Care"[Mesh] OR "Learning"[Mesh] OR "Awareness"[Mesh])

Embase

(peer observation.ti,ab,kw. OR peer clinical observation.ti,ab,kw. OR direct observation. ti,ab,kw. OR shadowing.ti,ab,kw. OR peer feedback.ti,ab,kw. OR peer assessment.ti,ab,kw. OR ((constructive feedback/ OR exp Peer group OR "peer review"/) AND observation/))

AND
(profession.ti,ab,kw. OR pro.ti,ab,kw. OR expert.ti,ab,kw. OR professionalism.ti,ab,kw. OR professional behavio*.ti,ab,kw. OR exp health care personnel/)

AND
(competenc*.ti,ab,kw. OR cognizance.ti,ab,kw. OR cognisance.ti,ab,kw. OR knowledge. ti,ab,kw. OR skill*.ti,ab,kw. OR attitude*.ti,ab,kw. OR behavio*.ti,ab,kw. OR exp health personnel attitude/ OR professional knowledge/ OR behavior/ or behavior change/ OR achievement/ or goal attainment/ or job performance/ or performance/ OR competence/ or clinical competence/ or nursing competence/ or professional competence/)

AND
(perception.ti,ab,kw. OR perceptions.ti,ab,kw. OR learning.ti,ab,kw. OR behavioral change*.ti,ab,kw. OR behavioural change*.ti,ab,kw. OR quality performance.ti,ab,kw. OR organizational performance.ti,ab,kw. OR organisational performance.ti,ab,kw.OR patient outcome*.ti,ab,kw. OR professional development.ti,ab,kw. OR competentional development. ti,ab,kw. OR competence development.ti,ab,kw. OR awareness.ti,ab,kw. OR health care quality/ or benchmarking/ or clinical effectiveness/ or incident report/ or exp medical error/ or nursing outcome/ or exp professional standard/ or "quality of nursing care"/ OR learning/ or collaborative learning/ or constructive feedback/ or lifelong learning/ or self-directed learning/ OR awareness/)

CINAHL
(TI (peer observation OR peer clinical observation OR direct observation OR shadowing OR peer feedback OR peer assessment) OR AB (peer observation OR peer clinical observation OR direct observation OR shadowing OR peer feedback OR peer assessment) OR (((MH "Feedback") OR (MH "Peer Group") OR (MH "Peer Review+")) AND (MH "Observational Methods+")))

AND
(TI (profession OR pro OR expert OR professionalism OR professional behavio*) OR AB(profession OR pro OR expert OR professionalism OR professional behavio*) OR (MH "Health Personnel+"))

AND
(TI(competenc* OR cognizance OR cognisance OR knowledge OR skill* OR attitude* OR behavio*) OR AB(competenc* OR cognizance OR cognisance OR knowledge OR skill* OR attitude* OR behavio*) OR (MH "Attitude of Health Personnel+") OR (MH "Professional Knowledge+") OR (MH "Knowledge") OR behavior[mesh] OR (MH "Professional Competence") OR (MH "Clinical Competence+"))

AND
(TI(perception OR perceptions OR learning OR behavioral change* OR behavioural change* OR quality performance OR organizational performance OR organisational performanceOR patient outcome* OR professional development OR competentional development OR competence development OR awareness) OR AB(perception OR perceptions OR learning OR behavioral change* OR behavioural change* OR quality performance OR organizational performance OR organisational performanceOR patient outcome* OR professional development OR competentional development OR competence development OR awareness) OR (MH "Quality of Health Care+") OR (MH "Lifelong Learning") OR (MH "Skill Acquisition") OR (MH "Transfer (Psychology)") OR (MH "Learning") OR (MH "Reflection") OR (MH "Self-Awareness"))

Cochrane

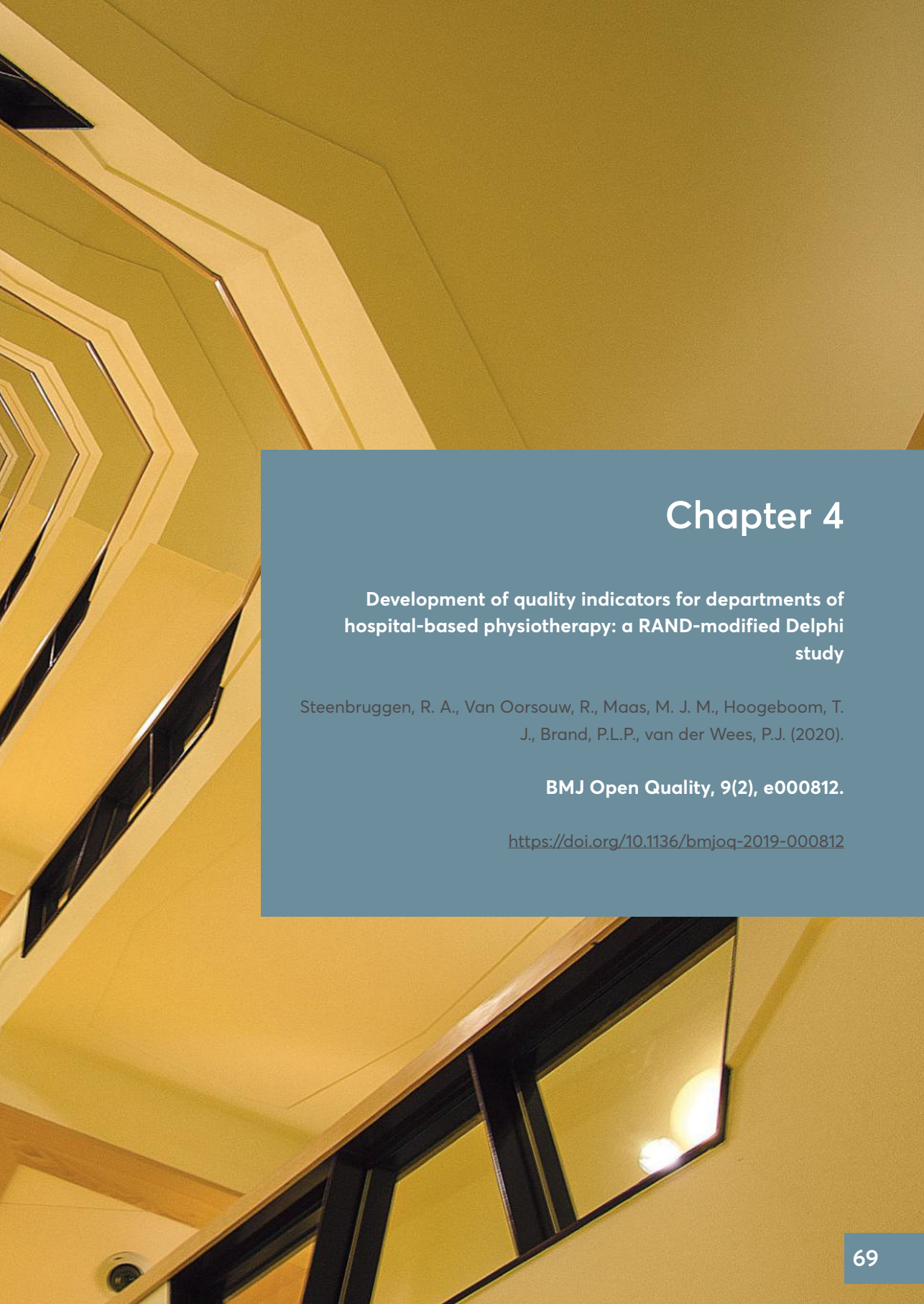
#1	("peer observation" OR "peer clinical observation" OR "direct observation" OR shadowing OR "peer feedback" OR "peer assessment"):ti,ab,kw (Word variations have been searched)	1750
#2	MeSH descriptor: [Formative Feedback] explode all trees	82
#3	MeSH descriptor: [Peer Group] explode all trees	1333
#4	MeSH descriptor: [Peer Review] explode all trees	109
#5	MeSH descriptor: [Observation] explode all trees	185
#6	#2 OR #3 OR #4	1511
#7	#5 AND #6	3
#8	#1 OR #7	1753
#9	(profession OR pro OR expert OR professionalism OR "professional behavior" OR "professional behaviour"):ti,ab,kw (Word variations have been searched)	42859
#10	MeSH descriptor: [Health Personnel] explode all trees	8386
#11	#9 OR #10	49602
#12	#8 AND #11	164
#13	(competenc* OR cognizance OR cognisance OR knowledge OR skill* OR attitude* OR behavio*):ti,ab,kw (Word variations have been searched)	158674
#14	MeSH descriptor: [Health Knowledge, Attitudes, Practice] explode all trees	5745
#15	MeSH descriptor: [Behavior] explode all trees	85246
#16	MeSH descriptor: [Professional Competence] explode all trees	3385
#17	#13 OR #14 OR #15 OR #16	204849
#18	#12 AND #17	102

References

1. Kessner DM, Kalk CE, Singer J. Assessing health quality--the case for tracers. N Engl J Med. 1973 Jan 25;288(4):189-94. https://doi.org/10.1056/NEJM197301252880406 . PMID: 4682231.
2. The Joint Commission. (2021). *The Joint Commission*. Geraadpleegd op 2 juli 2021, van https://www.jointcommission.org/
3. Siewert, B. (2018). The Joint Commission Ever-Readiness: Understanding Tracer Methodology. *Current Problems in Diagnostic Radiology*, *47*(3), 131–135. https://doi.org/10.1067/j.cpradiol.2017.05.002
4. *Introduction to On-site Survey Tracer Methodology*. (2021). Accreditation Canada E-Store. Geraadpleegd op 2 juli 2021, van http://store.accreditation.ca/products/introduction-to-on-site-survey-tracer-methodology
5. Bouchard, C., & Jean, O. (2016). Tracer methodology: an appropriate tool for assessing compliance with accreditation standards? *The International Journal of Health Planning and Management*, *32*(4), e299–e315. https://doi.org/10.1002/hpm.2376
6. Hanskamp-Sebregts, M., Zegers, M., Westert, G. P., Boeijen, W., Teerenstra, S., Van Gurp, P. J., & Wollersheim, H. (2018). Effects of patient safety auditing in hospital care: results of a mixed-method evaluation (part 1). *International Journal for Quality in Health Care*, *31*(7), 8–15. https://doi.org/10.1093/intqhc/mzy134
7. Greenfield D, Travaglia J, Braithwaite J, et al. Unannounced Surveys and Tracer Methodology: Literature Review. Sydney: Faculty of Medicine, University of New South Wales; 2007
8. Hinchcliff H, Glennie M, Travaglia J, et al. Patient Journey and Tracer Methodology: Literature review. Sydney: Australian Commission on Safety and Quality of Health Care; 2017.
9. Meireles, V. C., Labegalini, C. M. G., & Baldissera, V. D. A. (2019). Método Tracer e a qualidade do cuidado na enfermagem: revisão integrativa da literatura. *Revista Gaúcha de Enfermagem*, *40*. https://doi.org/10.1590/1983-1447.2019.20180142
10. Ivers, N., Jamtvedt, G., Flottorp, S., Young, J. M., Odgaard-Jensen, J., French, S. D., O'Brien, M. A., Johansen, M., Grimshaw, J., & Oxman, A. D. (2012). Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.cd000259.pub3
11. Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, *26*(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x
12. Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616
13. Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implementation Science*, *5*(1). https://doi.org/10.1186/1748-5908-5-69
14. Peters MD, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conducting systematic scoping reviews. Int J Evid Based Healthc. 2015 Sep;13(3):141-6. https://doi.org/10.1097/XEB.0000000000000050 . PMID: 26134548

15. Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/m18-0850
16. Covidence. (2021, 26 mei). *Covidence - Better systematic review management*. Geraadpleegd op 2 juli 2021, van http://www.covidence.org/
17. Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, *8*(1). https://doi.org/10.1186/1471-2288-8-45
18. Tong, A., Flemming, K., McInnes, E., Oliver, S., & Craig, J. (2012). Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. *BMC Medical Research Methodology*, *12*(1). https://doi.org/10.1186/1471-2288-12-181
19. Smidt, A., Balandin, S., Sigafoos, J., & Reed, V. A. (2009). The Kirkpatrick model: A useful tool for evaluating training outcomes. *Journal of Intellectual & Developmental Disability*, *34*(3), 266–274. https://doi.org/10.1080/13668250903093125
20. Bhansali, P., & Goldman, E. (2017). A novel peer feedback programme of family-centred rounds. *The Clinical Teacher*, *15*(6), 478–482. https://doi.org/10.1111/tct.12742
21. Blumenthal S, Musche-Ambrosius I, Reicherdt I. (2019). Mutual Learning Process by Practice Shadowing. Z Allg Med. 2019;95:70-4.
22. Borus, J., Pitts, S., & Gooding, H. (2017). Acceptability of peer clinical observation by faculty members. *The Clinical Teacher*, *15*(4), 309–313. https://doi.org/10.1111/tct.12681
23. Bouma J.(2012) Learning experiences of frontline nurse managers shadowing a colleague; A qualitative study. [Utrecht]: Universiteit Utrecht.
24. Di Rocco JR, Okado CK, Kimata C (2020). Patient safety initiative using peer observations and feedback inspire collegial workplace culture. Hawaii J Health Soc Welf. 79(5 Suppl 1):112–7.
25. van Dulst M.(2016) De tracer-methodiek als leerinstrument. [Utrecht]: Universitair Medisch Centrum Utrecht.
26. Lalleman, P., Bouma, J., Smid, G., Rasiah, J., & Schuurmans, M. (2017). Peer-to-peer shadowing as a technique for the development of nurse middle managers clinical leadership. *Leadership in Health Services*, *30*(4), 475–490. https://doi.org/10.1108/lhs-12-2016-0065
27. McDaniel, C. E., Singh, A. T., Beck, J. B., Birnie, K., Fromme, H. B., Ginwalla, C. F., Griego, E., King, M., Maniscalco, J., Nazif, J., Patra, K. P., Seelbach, E., Walker, J. M., & Bhansali, P. (2019). Current Practices and Perspectives on Peer Observation and Feedback: A National Survey. *Academic Pediatrics*, *19*(6), 691–697. https://doi.org/10.1016/j.acap.2019.03.005
28. Fromme, H. B., Karani, R., & Downing, S. M. (2009). Direct Observation in Medical Education: A Review of the Literature and Evidence for Validity. *Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine*, *76*(4), 365–371. https://doi.org/10.1002/msj.20123
29. Brand, P. L. P., Jaarsma, A. D. C., & Van der Vleuten, C. P. M. (2020). Driving lesson or driving test? *Perspectives on Medical Education*, *10*(1), 50–56. https://doi.org/10.1007/s40037-020-00617-w

30. Anderson, B. R., Kumar, S. R., Gottlieb-Sen, D., Liava'a, M. H., Hill, K. D., Jacobs, J. P., Moga, F. X., Overman, D. M., Newburger, J. W., Glied, S. A., & Bacha, E. A. (2019). The Congenital Heart Technical Skill Study: Rationale and Design. *World Journal for Pediatric and Congenital Heart Surgery*, *10*(2), 137–144. https://doi.org/10.1177/2150135118822689
31. Davies K, Mitchell C, Coombes I. THE ROLE OF OBSERVATION AND FEEDBACK IN ENHANCING PERFORMANCE WITH MEDICATION ADMINISTRATION. J Law Med. 2015 Dec;23(2):316-21. PMID: 26939498.
32. Eden, A. R., Hansen, E., Hagen, M. D., & Peterson, L. E. (2017). Physician Perceptions of Performance Feedback in a Quality Improvement Activity. *American Journal of Medical Quality*, *33*(3), 283–290. https://doi.org/10.1177/1062860617738327
33. Hoffmann, M., Sendlhofer, G., Pregartner, G., Gombotz, V., Tax, C., Zierler, R., & Brunner, G. (2018). Interventions to increase hand hygiene compliance in a tertiary university hospital over a period of 5 years: An iterative process of information, training and feedback. *Journal of Clinical Nursing*, *28*(5–6), 912–919. https://doi.org/10.1111/jocn.14703
34. Maas, M. J., Driehuis, F., Meerhoff, G. A., Heerkens, Y. F., Van der Vleuten, C. P., Nijhuis-van Der Sanden, M. W., & Van der Wees, P. J. (2018). Impact of Self- and Peer Assessment on the Clinical Performance of Physiotherapists in Primary Care: A Cohort Study. *Physiotherapy Canada*, *70*(4), 393–401. https://doi.org/10.3138/ptc.2017-40.pc
35. Crocetti, M., Kumra, T., Fingerhood, M., Peairs, K., Wolfe, L., & Wright, S. M. (2019). Coaching Primary Care Clinicians in the Ambulatory Setting: Direct Observation and Deliberate Practice. *Family Medicine*, *51*(10), 830–835. https://doi.org/10.22454/fammed.2019.791011
36. Maas, M. J. M., Nijhuis-van Der Sanden, M. W. G., Driehuis, F., Heerkens, Y. F., Van der Vleuten, C. P. M., & Van der Wees, P. J. (2017). Feasibility of peer assessment and clinical audit to self-regulate the quality of physiotherapy services: a mixed methods study. *BMJ Open*, *7*(2), e013726. https://doi.org/10.1136/bmjopen-2016-013726
37. Bowen-Brady, H., Haag-Heitman, B., Hunt, V., & Oot-Hayes, M. (2019). Asking for Feedback. *JONA: The Journal of Nursing Administration*, *49*(1), 35–41. https://doi.org/10.1097/nna.0000000000000705
38. James, D., Weeks-O'Neal, N., Oh, J., & Brown, T. (2019). An Investigation of Entry Level Doctor of Physical Therapy Student Perspectives of Peer Evaluation. *Internet Journal of Allied Health Sciences and Practice*. https://doi.org/10.46743/1540-580x/2019.1788
39. Cheung, W. J., Patey, A. M., Frank, J. R., Mackay, M., & Boet, S. (2018). LO37: Barriers and enablers to direct observation of clinical performance a qualitative study using the theoretical domains framework. *CJEM*, *20*(S1), S19–S20. https://doi.org/10.1017/cem.2018.99
40. Veloski, J., Boex, J. R., Grasberger, M. J., Evans, A., & Wolfson, D. B. (2006). Systematic review of the literature on assessment, feedback and physicians' clinical performance: BEME Guide No. 7. *Medical Teacher*, *28*(2), 117–128. https://doi.org/10.1080/01421590600622665



Chapter 4

Development of quality indicators for departments of hospital-based physiotherapy: a RAND-modified Delphi study

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ABSTRACT

Background

International hospital accreditation instruments, such as Joint Commission International (JCI) and Qmentum, focus mainly on hospital policy and procedures, and do not specifically cover a profession such as hospital-based physiotherapy. This justifies the need for a quality system to which hospital-based physiotherapy can better identify, based on a common framework of quality indicators for effective quality management.

Objective

To identify the most important quality indicators of a hospital-based physiotherapy department in the eyes of hospital-based physiotherapists and their managers.

Methods

Based on input from three focus groups and a structured literature review, a first set of quality indicators for hospital physiotherapy was assembled. After checking this set for duplicates and for overlap with JCI and Qmentum, it formed the starting point of a modified Delphi procedure. In two rounds, 17 hospital-based physiotherapy experts rated the quality indicators on relevance through online surveys. In a final consensus meeting, quality indicators were established, classified in quality themes, and operationalised by describing for each theme the rationale, specifications, domain, and type of indicator.

Results

Three focus groups provided 120 potential indicators, which were complemented with 18 potential indicators based on literature. After duplicate and overlap check and the Delphi procedure, these 138 potential indicators were reduced to a set of 56 quality indicators for hospital-based physiotherapy. Finally, these 56 indicators were condensed into 7 composite indicators, each representing a quality theme based on definitions of the EFQM.

Conclusion

A set of 56 quality indicators, condensed into 7 composite indicators each representing a quality theme, was developed to assess the quality of a hospital-based physiotherapy department.

Keywords: physiotherapy, quality indicators, hospital-based physiotherapy, physiotherapy department.

INTRODUCTION

Hospital-based physiotherapy can play a significant role in the multidisciplinary treatment of hospitalised patients by focusing primarily on functional mobility as an important part of the patient's functional health condition, before, during and after hospitalisation.[1] Quality of hospital-based physiotherapy can be defined as the degree of similarity between criteria of good care (desirable care) and the practice of care (actual care).[2] This degree of similarity can be quantified through quality indicators which can be classified into structure, process and outcome indicators.[2-4] In hospital care, quality indicators are being used as a tool in quality improvement cycles e.g. to decrease morbidity and mortality, or to qualify for a recognised quality approval such as Joint Commission International (JCI) or Qmentum.[5-8] These globally expanding accreditation instruments focus mainly on hospital policy and procedures and do not specifically cover a profession like hospital-based physiotherapy.[7,8]

To determine whether the practice of care provided by hospital-based physiotherapists meets the criteria of desirable care and to stimulate continuous quality improvement, a quality system is required. Such a quality system typically consists of four components: a professional profile with core competencies, a system of standards and guidelines, external accountability and systematic quality control.[9] Because accreditation instruments like JCI and Qmentum cover only the medical and nursing staff as recognisable individual disciplines,[7, 8] these instruments do not allow systematic quality control of hospital-based physiotherapy departments. This justifies the need for a tailored quality system for hospital-based physiotherapy. To assess the quality of the provided hospital physiotherapy care, the alignment between performance, strategy, vision and desired outcomes needs to be established.[10] Profession-specific quality assessment feedback can help physiotherapists to identify areas of professional practice that need improvement. This process has been recommended as an essential component in raising the standards of hospital-based physiotherapy care.[11,12]

Because organisational restructuring due to financial issues is common in multidisciplinary hospital care, a quality system for hospital-based physiotherapy should be sufficiently flexible towards organisational changes and the associated changing roles of hospital physiotherapists. This continuously changing role places an increased emphasis on higher-level skills in patient care and interprofessional communication and collaboration skills, and highlights the ongoing importance of professionalism.[13] When hospital restructuring takes place, physiotherapists, as part of allied health care, need their own conceptual model to describe the effect of hospital restructuring on their professional role.[14,15] Hospitals nowadays struggle how to organise these changing roles: a move to program management from a traditional department structure affects the professional practice of physiotherapists, reporting both positive and negative effects on professional affect, professional practice, and patient care.[16]

A quality system for an individual profession such as hospital-based physiotherapy should be based on a common framework for effective quality management to which this specific profession can better identify, and which is independent of hospital restructuring. Because such a system is lacking, the aim of this study is to identify the most important indicators for the quality of a hospital-based physiotherapy department in the eyes of hospital-based physiotherapists and their managers, as a first step towards establishing a valid and useful quality system for the profession.

METHODS

A modified RAND/UCLA (RAND Corporation/University of California at Los Angeles) Appropriateness Method Delphi study was used to establish a list of the key quality indicators of hospital-based physiotherapy.[17] The study was conducted from May 2017 to January 2019 in a convenience sample of Dutch hospital-based physiotherapists and their managers, taken from the member databases of the Dutch Association of Physical Therapy in Hospitals (NVZF) and the Dutch Association of Managers of Physical Therapy (VLF). According to Dutch regulations ethical review was not required because there were not any patients or interventions involved in this study.

Patient and public involvement

No patients or public were involved in this study because the opinion of the professional was the main topic. The results of the study will be disseminated to the members of the Delphi Panel and members of the NVZF and VLF during the annual congress of the NVZF.

The study consisted of three stages.

Stage 1: focus groups

During a scheduled meeting in May 2017, all VLF members were informed that focus groups on quality indicators for hospital-based physiotherapy would be part of the meeting's program. Attendees expressing interest in participating in the focus groups were divided into three equally sized focus groups. Each focus group interview was moderated by an NVZF board member experienced in the subject of quality of hospital-based physiotherapy. Every moderator received detailed moderation instructions from one of the primary researchers and was supported by a research team member who made field notes during the interviews. The focus group interviews were semi-structured following a topic list (Appendix 1), concentrating on two main questions:

1. Which do you think are the most important elements that demonstrate the quality of a hospital-based physiotherapy department?
2. What do you think is a good and short definition of quality of a hospital-based physiotherapy department?

Respondents were encouraged to speak freely and to respond to each other. The interviews, planned for one hour, were audio recorded and transcribed. The transcripts were checked against the field notes and then returned for a member check. The two primary researchers independently analysed the transcripts using Atlas.ti 7,[18,19] to identify all the quality topics that were proposed by the participants during the group interviews. Differences were resolved by discussion until consensus was reached.

Stage 2: literature search

A structured literature search was conducted to complement the initial set of quality indicators from stage 1. PubMed was searched in February 2018 using the following search string:" ((“Physical Therapy Department, Hospital”[Mesh]) AND ((((“Quality of Health Care”[Mesh] OR “Quality Assurance, Health Care”[Mesh])))) OR quality[Title/Abstract])) AND ((((“Organization and Administration”[Mesh] OR “organization and administration” [Subheading])))) OR ((Organization*[tiab] OR Administrat*[tiab])))". The two primary researchers independently reviewed the retrieved titles and abstracts, and the full text of potentially relevant articles. The reference lists of retrieved full-text articles were hand-searched for potentially relevant articles. Relevant articles were independently hand-searched for additional quality indicators. Differences were discussed until the two primary researchers agreed on a set of additional quality indicators which were added to the set obtained in stage 1. The resulting set of indicators was checked for duplicates and for overlap with JCI and Qmentum quality indicators and classified by following the EFQM (the European Foundation for Quality Management) Excellence Model (figure 1).[20]

Stage 3: Delphi rounds

All 180 NVZF members, hospital-based physiotherapists, and managers of hospital-based physiotherapy received written study information by email, along with an invitation to join the Delphi panel. Members who responded positively to the invitation took part in the Delphi panel. The Delphi procedure consisted of two online survey rounds and a consensus meeting.

In the first two online survey rounds, the IQ (Scientific Center for Quality of Healthcare) Consensus Tool was used.[21] This tool supports groups in achieving consensus, based on the Modified RAND Delphi Method. Each quality indicator was valued by the group members using a 9-point Likert scale, ranging from very low to very high value. The tool combines the highest tertile, median, and top-3 scores to arrive at a ‘selection’, ‘discussion’ or ‘no selection’ score, using the Campbell criteria.[22] Group members were also asked whether indicators showed overlap with known JCI- or Qmentum quality indicators and if they thought indicators were missing.

In preparation for the consensus meeting, the research team put together the first draft, assembling the indicators by theme. The meeting started with a presentation on the study purpose and setup, followed by a full-day group discussion moderated by the first author

who is highly experienced in running meetings in similarly sized groups. Throughout the meeting, changes to the developing indicator set were projected on a screen in real-time. The meeting was audio-recorded, and comments and changes were recorded by a research team member.

First, the consensus panel members were asked to confirm the quality indicators they had selected or deleted in the two online survey rounds. Second, they discussed whether the indicators with the label 'discussion' should be included or deleted. All selected indicators were condensed into composite indicators, each representing a quality theme based on definitions of the EFQM. These composite indicators were operationalized by describing the rationale, specifications, domain (following EFQM) and type of indicator (structure, process or outcome). When differences in opinion hampered the process, decisions were made through consensus. When unanimous consensus appeared impossible, voting by hand raising took place, where a >75% majority was needed for adopting a proposal for amendment If this majority was not attained the proposal was rejected.

One week after the meeting the resulting quality indicator list was sent to the participants by email, to allow feedback on the text. This feedback was processed by the two primary researchers, leading to the final set of themes and indicators.

RESULTS

Focus groups

The quarterly VLF meeting in May 2017 was attended by 26 of 70 members. Characteristics of the participants are presented in table 1. Attending members were divided into three focus groups.

Analysis of the three focus groups transcripts resulted in 120 potential quality indicators for hospital-based physiotherapy.

Literature search

The PubMed search yielded 163 hits, 12 of which were considered relevant after reading title and abstract.[11-16,23-28] These 12 articles were searched for quality indicators not found during stage 1. The resulting 18 indicators were added to the 120 potential quality indicators for hospital-based physiotherapy departments obtained in stage 1, providing a total of 138 potential indicators. Deleting duplicates and indicators present in JCI and Qmentum resulted in a list of 103 potential quality indicators of hospital-based physiotherapy (Appendix 2). These were classified according to the EFQM Model.

Delphi rounds

The Delphi panel consisted of 17 of 180 NVZF members. Characteristics of the participants are presented in table 1.

Table 1: Group member characteristics

	Expert Group VLF **N = 26**	**Delphi Group NVZF** **N =17**
Age in years, mean (SD)	51.6 (8.9)	45.8 (11.6)
Men : Women (%)	35 : 65	47 : 53
Working or worked as a physiotherapist (%)	85	100
University : General teaching : District Hospital (%)	15 : 39 : 46	18 : 53 : 29
Experience in years, mean (SD)	8.9 (5.7)	14.4 (9.7)
Position (partially) in management (%)	88	53

In the first online survey round (October 2018) with a 100% response, 43 quality indicators were selected, 35 were labelled as 'discussion', and 25 were not selected. None of the group members indicated missing quality indicators or overlaps with JCI or Qmentum indicators.
In the second online survey round (November 2018) with a 100% response, the 35 'discussion' indicators were reoffered to the group members. The members selected 13 indicators to be included, 7 were labelled as 'discussion', and 15 were not selected.
During the consensus meeting in January 2019, with a 94% attendance of group members, consensus was reached to definitively not select the 7 indicators which were labelled as 'discussion'. With this decision, 56 quality indicators for hospital-based physiotherapy were set (figure 2). The participants agreed that these 56 quality indicators could be grouped into seven themes (composite indicators, table2). Every theme with the specific indicators was operationalized by describing the rationale, specifications, domain (according to EFQM) and type of indicator (structure, process or outcome) (appendix 3).

Composite Indicator (Quality Theme)	Quality Indicators
1) The hospital physiotherapy department has a culture of continuous learning, improvement and open dialogue.	• PDCA (Plan Do Check Act) cycle • Peer review • Treatment • Collegiality within team • Meeting obligations • Culture of feedback/open dialogue
2) The hospital physiotherapy department ensures the promotion of staff expertise that is consistent with the demand for care.	• Structure of team (Bachelor/Masters) • Continuity of quality • PDCA (Plan Do Check Act) cycle • Training plan • Expertise • Specialwisations • Attitude to delivering quality • Quality passport
3) The hospital physiotherapy department uses a planning & control cycle to work on achieving its goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy.	• Quality plan • Financial possibilities • Innovation and modernisation • Visibility • Continuity of care • Critically monitoring process indicators and acting accordingly • Efficiency of operational process • Service quality
4) The hospital physiotherapy department forms an integral part of the overall patient and hospital process.	• Care trajectories: forming an integral part of • Demonstrable effectiveness • Commitment to internal training • Movement-related care • Innovation and modernisation • Added value of physiotherapy in the process • Supplementary diagnostics • Uniformity of treatment • Evaluation based on clinimetrics • Endpoints of treatment • Multi-disciplinary cooperation • Care networks: role and position

5) The hospital physiotherapy department implements a patient-oriented policy.	• Contribution to patient's ability to cope independently • Provision of information to patient • Patient self-determination • Sufficient care • Patient-oriented • Patient safety • Handover • Opening times • Accessibility
6) The hospital physiotherapy department systematically ensures that the physiotherapeutic interventions undertaken by its employees are of the highest possible quality.	• Clinical reasoning • Peer review • Patient file checks • EBP (Evidence Based Practice) conditions (access to literature) • EBP (Evidence Based Practice) • Endpoints of treatment • Implementation of new processes/ treatment policy • Protocols; topicality, management, application • Guidelines • Evaluation based on clinimetrics
7) The hospital physiotherapy department collects feedback on its performance from stakeholders and staff and takes action that is based on this feedback.	• Employee satisfaction • Customer satisfaction • Patient satisfaction

DISCUSSION

Major Findings

This study aimed to identify important quality indicators of a hospital-based physiotherapy department in the eyes of hospital-based physiotherapists and their managers providing an inside out perspective. A RAND-modified Delphi procedure resulted in 56 indicators condensed into 7 composite indicators each representing a quality theme: (1) culture of continuous learning, improvement and open dialogue, (2) promotion of staff expertise that is consistent with the demand for care, (3) using a planning & control cycle to work on

achieving its goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy, (4) forming an integral part of the overall patient and hospital process, (5) implementing a patient-oriented policy, (6) systematically ensuring that the physiotherapeutic interventions undertaken by employees are of the highest possible quality, (7) collecting feedback on performance from stakeholders and staff and taking action that is based on this feedback.

Meaning of the Findings

These composite quality indicators can serve as the first step towards a quality system for hospital-based physiotherapy, meeting the hospital-based physiotherapy's need of such a system. With these findings, based on a common framework, a foundation could be laid for a method of quality improvement of hospital-based physiotherapy in the Dutch situation. This method could rely on an assessment procedure in which the specific profession of hospital-based physiotherapy recognises itself better than in systems such as JCI or Qmentum. Assessment of professional performance, including both clinical and organisational performance, can be applied for summative or formative purposes. Summative assessments are used to decide on academic progress, certification, or accreditation (such as JCI and Qmentum). Formative assessments are used to support continuous learning and quality improvement.[29] Most indicators found in this study are structure elements, a few are process indicators, and none are outcome indicators. This suggests that a formative assessment would be better in place right now.

Relation with similar Studies

To our knowledge, this is the first set of quality indicators for hospital-based physiotherapy. A known set of quality indicators for a specific discipline in Dutch hospitals is one used by obstetric caregivers. The user experience of this set shows high awareness of - and reasonable contribution to quality indicators,[30] which supports the similar use of quality indicators for hospital-based physiotherapy. Learning from nursing initiatives concerning the use of quality indicators, it is also important that leaders empower their staff in the process of transforming towards a higher-quality delivery system.[31]

Strengths of the Study

This study has several strengths. Although the set of indicators was developed from the perspective of Dutch hospital-based physiotherapy departments, we consciously used established indicator development methodology – i.e., the RAND-modified Delphi procedure - to improve its validity and generalisability.[17,32,33] The response rates to the online surveys were high with 100% in the two online rounds, and 94% attendance of group members during the consensus meeting. Because members of the focus groups and the Delphi Panel represent approximately 30% of the total amount of hospitals in the Netherlands, in which organisational positioning of a department of hospital-based physiotherapy can differ strongly, we assume that the presented list of quality themes and indicators is

sufficiently flexible towards organisational changes and changing roles of hospital-based physiotherapy. Research has shown that bottom-up quality improvement initiatives, such as communities of practice and professional networks focusing on collaborative learning, might hold better and more sustainable results than external, top-down regulations,[34-36] because shared social and professional norms are important predictors of behaviour change.[37,38] This is the main reason why we chose a bottom-up approach for our study.

Limitations

We acknowledge the following limitations. Although Delphi consensus groups can produce collective answers, the achieved consensus is not necessarily accurate; bias can occur in the consensus meeting because one individual's opinion can be overrepresented.[39] Also the group size of 17 members was slightly larger than the ideal Delphi group size of 5-11 members.[40] Since the consensus meeting was not anonymous, respondents may have felt restrained to speak freely. Although we consciously invited representatives of hospital-based physiotherapy, their scope may have limited affecting the validity and generalizability. Stakeholders from outside the profession of hospital-based physiotherapy were not involved in the development process and the set of quality indicators has not yet been subjected to external review.[41]

Suggestions for further Research

The presented list of quality indicators, classified in quality themes, should be enriched in future research. By including key stakeholders of hospital-based physiotherapy such as patients, medical specialists, and hospital management, an outside-in perspective could be provided. Combining the results from both the inside and outside perspective could provide the ideal mix of indicators for good quality of hospital-based physiotherapy. In addition, our set of quality indicators should be further assessed for reliability, validity, and acceptability. Reviewing the list by national and international hospital-based physiotherapy specialists could contribute to these points, and to the issue of generalisation. It is conceivable that after these steps a foundation could be laid for a method of quality improvement of hospital-based physiotherapy, at least in the Dutch situation.

CONCLUSIONS

This study presents a set of 56 quality indicators, condensed into 7 composite indicators each representing a quality theme based on definitions of the EFQM. These indicators are important and relevant to Dutch hospital-based physiotherapy departments and their managers. To our knowledge, this is the first time such a quality set for hospital-based physiotherapy has been presented. By involving relevant stakeholders and external reviewers this set can be further assessed on reliability, validity, and acceptability, laying a foundation for a method of quality improvement of hospital-based physiotherapy.

This study was reported following the consolidated criteria for reporting qualitative research (COREQ).[42]

Appendix 1: Topic List Focus Groups VLF

1. Which do you think are the most important elements that demonstrate the quality of a hospital physiotherapy department? (20 min.)
2. How can these elements be tested, or are they now being tested? (10 min)
3. How do you account for your quality? (05 min)
4. Which stakeholders have the greatest interest in your quality? (10 min)
5. Which stakeholders have the greatest influence on your quality? (10 min)
6. What do you think is a good and short definition of quality of a hospital-based physiotherapy department? (05 min)

Appendix 2: 103 potential Quality Indicators for hospital-based physiotherapy, at the end of stage 2, and classified conform EFQM

Item EFQM-Model	Quality Indicator
Leadership	Organisation structure Management qualities Team building (Bachelor / Master) Culture of continuous improvement Feedback/approach culture
People	Continuity of quality Dedicated teams Expertise (knowledge and skills) Clinical reasoning Experience Equipment knowledge and skill Specializations Attitude to deliver quality Treatment Moral values Honor existing commitments Collegiality within a team Mentorship Training place Central quality register Quality passport: competencies, training, portfolio InterVision Self-evaluation Annual interviews Personal development plan Training plan

Item EFQM-Model	Quality Indicator
Strategy	Policy plan Quality plan Financial possibilities Benchmarking Key figures in order Movement care Contribute to patient self-reliance Recognisable effectiveness Outcome measures for treatment Involvement in internal training Healthcare networks: role and position Recognisability of hospital physiotherapy department Innovation and renewal Patient self-efficacy
Partnerships and Resources	Adequate care Lean work Effectiveness of hospital physiotherapy Added value of physiotherapy in the process Care paths: being an integral part of Provide additional diagnostics Patient focus Provision of information to the patient EBP conditions (access to literature) Multidisciplinary collaboration Transmission Equipment Safety Support by staff services Hygiene department and employees Employee safety

Item EFQM-Model	Quality Indicator
Processes, Products, and Services	Efficiency operational process Service quality Guarantee operations in the event of system failure Act in unexpected situations Communication security Incident registration Complaint handling Accessibility Availability (24/7) Continuity of care Uniformity of treatment Lead time Access times Visibility Implementation of new processes/treatment policy Training program Monitor and act on critical process indicators Hospital quality system Protocols: current events, management, application Guidelines PDCA (Plan Do Check Act) cycle Audits Tracers File checks Evaluation based on clinometry Evidence-based practice Scientific research (participation)
People Results	Commitment with department / institution policy Employee satisfaction
Customer Results	Familiarity with hospital-based physiotherapy Service agreements / SLA calls Customer Satisfaction Patient satisfaction Patient safety PREMs (Patient Related Evaluation Measurements) PROMs (Patient Related Outcome Measurements)

Item EFQM-Model	Quality Indicator
Society Results	
Business Results	Quality annual report Production Satisfaction hospital management/board Accountability (quarterly reports) Health Insurer Response

Appendix 3: The 56 Quality Indicators for hospital-based Physiotherapy condensed into 7 composite indicators (quality themes), and classified by rationale, specifications, domain (EFQM) and type of indicator.

1	**The hospital physiotherapy department has a culture of continuous learning, improvement and open dialogue.**
Rationale	People are the key to staying relevant. And more specifically: people who learn. Critical reflection on your own performance and that of others ensures a continuous cycle of improvement.
Specifications	The physiotherapy department must be able to demonstrate the following components: - A quality management system has been established to monitor and continuously improve quality, based on the PDCA (Plan Do Check Act) cycle - There is a guaranteed structure to facilitate and record peer review between colleagues, internally and/or externally - A policy document is available that focuses on collegiality within the team, the culture of open dialogue and treatment
Type of indicator	Structure
Domain	Organisation; Leadership
Related indicators	• PDCA (Plan Do Check Act) cycle • Peer review • Treatment • Collegiality within team • Meeting obligations • Culture of feedback/open dialogue

2	**The hospital physiotherapy department ensures the promotion of staff expertise that is consistent with the demand for care.**
Rationale	Maintaining staff expertise is important for providing the best possible care. New insights in treatment methods, technological developments, and new legislation mean that work alone is not enough to maintain knowledge and skills.
Specifications	The physiotherapy department must be able to demonstrate the following components: - A team structure that meets the demand for care in terms of specialisation and educational level (Bachelor/Masters) - There is a training plan that matches the demand for care - The general and specific qualities of staff are registered in a quality portfolio or quality passport - The staff are aware of how their individual expertise contributes to the quality of the department
Type of indicator	Structure
Domain	Organisation; Management of Staff
Related indicators	• Structure of team (Bachelor/Masters) • Continuity of quality • PDCA (Plan Do Check Act) cycle • Training plan • Expertise • Specialisations • Attitude to delivering quality • Quality passport

3	**The hospital physiotherapy department uses a planning & control cycle to work on achieving its goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy.**
Rationale	A policy plan is an indispensable instrument for the department and its staff. It is the connecting theme that underlies the implementation of the mission and vision, the achievement of goals and the effective and efficient use of resources.
Specifications	The physiotherapy department must be able to demonstrate the following components: - There is a long-term policy plan that corresponds to the frameworks of the organisational policy - Derived from the policy plan, there is an annual plan in which goals are formulated in specific terms and related to a timeframe - There is periodic reporting to management and staff on the realisation of the policy goals, related to the planning & control cycle
Type of indicator	Structure
Domain	Organisation; Strategy & Policy
Related indicators	• Quality plan • Financial possibilities • Innovation and modernisation • Visibility • Continuity of care • Critically monitoring process indicators and acting accordingly • Efficiency of operational process • Service quality

4	**The hospital physiotherapy department forms an integral part of the overall patient and hospital process.**
Rationale	Patients can be helped more effectively if there is cooperation and rapport between care-providers in the treatment.
Specifications	The physiotherapy department must be able to demonstrate the following components: - The physiotherapy department is embedded in relevant care trajectories that fit within its domain - The physiotherapy department is aligned with the strategic priorities of the hospital that fit within its domain - The physiotherapy department undertakes initiatives in order to put its movement-related domain on the map within the hospital - The physiotherapy department demonstrates its added value within the hospital - The physiotherapy department participates in the establishment and implementation of a multi-disciplinary treatment policy
Type of indicator	Structure
Domain	Organisation; Process Management
Related indicators	• Care trajectories: forming an integral part of • Demonstrable effectiveness • Commitment to internal training • Movement-related care • Innovation and modernisation • Added value of physiotherapy in the process • Supplementary diagnostics • Uniformity of treatment • Evaluation based on clinimetrics • Endpoints of treatment • Multi-disciplinary cooperation • Care networks: role and position

5	**The hospital physiotherapy department implements a patient-oriented policy.**
Rationale	**Patient-oriented care is characterised by finely tuned communication between the care-providers involved and the patients, who are invited to participate in decisions on their treatment.**
Specifications	The physiotherapy department must be able to demonstrate the following components: - Treatment contributes to the patient's self-reliance and takes account of their safety - The provision of information contributes to the patient's self-determination - Physiotherapeutic care is sufficient and appropriate and is focused on responding to the patient's request for help - If physiotherapy is continued, a handover is arranged within 48 hours of discharge - The opening times and accessibility of the physiotherapy department are transparent
Type of indicator	Structure
Domain	Organisation; Resource Management
Related indicators	• Contribution to the patient's ability to cope independently • Provision of information to the patient • Patient self-determination • Sufficient care • Patient-oriented • Patient safety • Handover • Opening times • Accessibility

6	**The hospital physiotherapy department systematically ensures that the physiotherapeutic interventions undertaken by its employees are of the highest possible quality.**
Rationale	Physiotherapeutic interventions with a thorough structure and/or scientific grounding give stakeholders confidence in the quality of the department, thereby creating recognition.
Specifications	The physiotherapy department must be able to demonstrate the following components: - There is peer review of the clinical reasoning component - There is peer review of the patient file management component - EBP (Evidence Based Practice) always forms part of local protocols and treatments
Type of indicator	Structure
Domain	Organisation; Management of Staff
Related indicators	• Clinical reasoning • Peer review • Patient file checks • EBP (Evidence Based Practice) conditions (access to literature) • EBP (Evidence Based Practice) • Endpoints of treatment • Implementation of new processes/treatment policy • Protocols; topicality, management, application • Guidelines • Evaluation based on clinimetrics

7	**The hospital physiotherapy department collects feedback on its performance from stakeholders and staff and takes action that is based on this feedback.**
Rationale	Feedback from stakeholders and staff helps to increase the added value of the role of the physiotherapy department within the hospital.
Specifications	The physiotherapy department must be able to demonstrate the following components: - There are periodic employee satisfaction surveys, and the results of these are used as input for departmental policy - There are periodic patient satisfaction surveys, and the results of these are used as input for departmental policy - There are periodic customer satisfaction surveys, and the results of these are used as input for departmental policy
Type of indicator	Structure
Domain	Results; Employees, Customers, and Partners
Related indicators	• Employee satisfaction • Customer satisfaction • Patient satisfaction

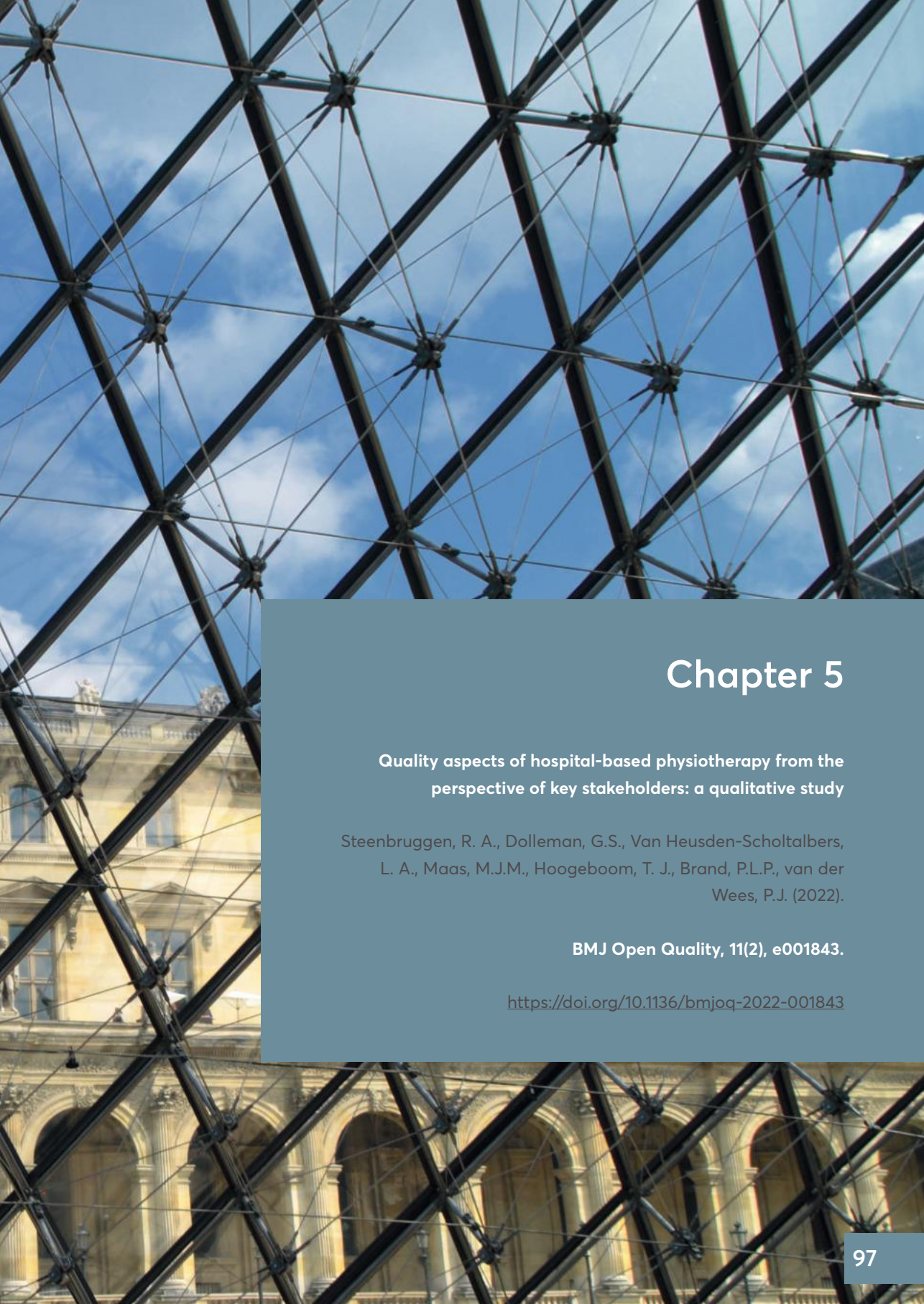
References

1. Euwes M, Engelbert RHH, Geleijn E, et al. Beroepscompetentieprofiel ziekenhuisfysiotherapeut. Amersfoort, NL: NVZF 2010:25-40.
2. Donabedian A. The Definition of Quality and Approaches to Its Assessment: Vol 1. Explorations in Quality Assessment and Monitoring. Ann Arber, MI: Health Administration Press 1980.
3. Donabedian A. The quality of care: how can it be assessed? *Jama* 1988;260(12):1743-1748 https://doi.org/10.1001/jama.260.12.1743
4. Salzer MS, Nixon CT, Schut LJ, et al. Validating quality indicators: Quality as relationship between structure, process, and outcome. *Eval Rev.* 1997;21(3):292-309 https://doi.org/10.1177/0193841X9702100302
5. Wright J, Dugdale B, Hammond I, et al. Learning from death: a hospital mortality reduction programme. *J R Soc Med* 2006;99(6):303-308 https://doi.org/10.1258/jrsm.99.6.303
6. Haynes AB, Weiser TG, Berry WR, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. *N Engl J Med* 2009;360(5):491-499 https://doi.org/10.1056/NEJMsa0810119
7. The Joint Commission. The joint commission big book of policies and procedures for hospitals. Vol 1. Oak Brook, Ill: Joint Commission Resources 2019
9. https://accreditation.ca/intl-en/accreditation/qmentum/ ; date accessed: April 16th, 2019.
10. Klazinga N, Lombarts K, van Everdingen J. Quality management in medical specialties: the use of channels and dykes in improving health care in The Netherlands. *Jt Comm J Qual Improv* 1998;24(5):240–250 DOI:10.1016/S1070-3241(16)30378-9
11. Jones R, Jenkins F. Key tools and techniques in management and leadership of the allied health professions. Milton Keynes: Radcliffe Publishing Ltd. 2011:1-29
12. Hammond R, Lennon S, Walker MF. Changing occupational therapy and physiotherapy practice through guidelines and audit in the United Kingdom. *Clin Rehabil* 2005;19(4):365-371 https://doi.org/10.1191/0269215505cr784oa
13. Coulson-Thomas C. Re-engineering hospital and healthcare processes. *Health Estate J* 1997;51(7):14-15
14. Lopopolo RB. Hospital restructuring and the changing nature of the physical therapist's role. *Phys Ther* 1999;79(2):171-185 DOI:10.1093/ptj/79.2.171
15. Lopopolo RB. The effect of hospital restructuring on the role of physical therapists in acute care. *Phys Ther* 1997;77(9):918-932 https://doi.org/10.1093/ptj/77.9.918
16. Lopopolo RB. Development of the professional role behaviors survey (PROBES). *Phys Ther* 2001;81(7):1317-1327 DOI:10.1093/ptj/81.7.1317
17. Miller PA, Solomon P. The influence of a move to program management on physical therapist practice. *Phys Ther* 2002;82(5):449-458 DOI:10.1093/ptj/82.5.449
18. Fitch K, Bernstein SJ, Aguilar MD, et al. The RAND/UCLA appropriateness method user's manual. Santa Monica CA: RAND 2001:10-53
19. Olson K, Young RA, Schultz IZ. Handbook of Qualitative Health Research for Evidence-Based Practice. New York NY, Springer 2015.
20. Friese S. Qualitative Data Analysis with ATLAS.ti. London, Sage Publications Ltd 2012.

22. https://www.efqm.org/ ; date accessed: April 23rd, 2019
21. https://www.iqhealthcare.nl/nl/kennisbank/tools/iq-consensus-tool/ ; date accessed: April 23rd, 2019
22. Campbell SM, Roland MO, Quale JA, et al. Quality indicators for general practice: which ones can general practitioners and health authority managers agree are important and how useful are they? *J Public Health Med* 1998;20:414-421 DOI:10.1093/oxfordjournals.pubmed.a024796
23. Braithwaite J, Westbrook M. Rethinking clinical organisational structures: an attitude survey of doctors, nurses and allied health staff in clinical directorates. *J Health Serv Res Policy* 2005;10(1):10-17 https://doi.org/10.1177/135581960501000105
24. Hanekom SD, Louw Q, Coetzee A. The way in which a physiotherapy service is structured can improve patient outcome from a surgical intensive care: a controlled clinical trial. *Crit Care* 2012;16(6):R230 https://doi.org/10.1186/cc11894
25. Adamson BJ, Lincoln MA, Cant RV. An analysis of managerial skills for the current and future health care environment. *J Allied Health* 2000;29(4):203-213
26. Ziviani J, Wilkinson SA, Hinchliffe F, et al. Mapping allied health evidence-based practice: providing a basis for organisational realignment. *Aust Health Rev* 2015;39(3):295-302 https://doi.org/10.1071/AH14161
27. Wilson S. Instructional Insights: Restructuring the Fieldwork Experience: One Clinic's Journey. *Occup Ther Health Care* 2017;31(4):365-373 https://doi.org/10.1080/07380577.2017.1381895
28. Turner-Stokes L, Williams H, Abraham R, et al. Clinical Standards for inpatient specialist rehabilitation services in the UK. *Clin Rehabil* 2000;14(5):468-480 https://doi.org/10.1191/0269215500cr349oa
29. Black P, Wiliam D. Developing the theory of formative assessment. *Educ Assessment, Eval Account* 2009;21(1):5-31. https://doi.org/10.1007/s11092-008-9068-5
30. Cellissen E, Franx A, Roes KCB. Use of quality indicators by obstetric caregivers in the Netherlands: A descriptive study. *Eur J Obstet Gynecol Reprod Biol* 2017;211:177-181 https://doi.org/10.1016/j.ejogrb.2017.02.016
31. Butler GA, Hupp DS. Pediatric quality and safety: A nursing perspective. *Pediatr Clin North Am* 2016;63(2):329-339 https://doi.org/10.1016/j.pcl.2015.11.005
32. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. *J Adv Nurs* 2000;32(4):1008-1015 DOI:10.1046/j.1365-2648.2000.t01-1-01567.x
33. Boulkedid R, Abdoul H, Loustau M, et al. Using and reporting the Delphi Method for Selecting Healthcare Quality Indicators: A Systematic Review. *PLoS One* 2011;6(6):1-9 https://doi.org/10.1371/journal.pone.0020476
34. Grol R. Quality improvement by peer review in primary care: a practical guide. *Qual Health Care* 1994;3:147–52 https://doi.org/10.1136/qshc.3.3.147
35. Butterfield R, McCormick B, Anderson R, *et al*. Quality of NHS care and external pathway peer review. 2012. Available at: https://www.chseo.org.uk/downloads/report3-peerreview.pdf. Date accessed 10th June 2019)
36. Pronovost PJ, Hudson DW. Improving healthcare quality through organisational peer-to-peer assessment: lessons from the nuclear power industry. *BMJ Qual Saf* 2012;21:872–5. https://doi.

org/10.1136/bmjqs-2011-000470

37. Prochaska JO, Redding CA, Evers KE. Health behavior and health education. Hoboken NJ; Wiley & Sons 2008:97–121.
38. Ajzen I. Nature and operation of attitudes. *Annu Rev Psychol* 2001;52:27–58 https://doi.org/10.1146/annurev.psych.52.1.27
39. Howell E. International guidelines for national patient safety incident reporting systems: An expert Delphi review process. *BMJ Qual Safety* 2017;26(2):150-163 DOI:10.1136/bmjqs-2015-004456
40. Waggoner J, Carline JD, Durning SJ. Is there a Consensus on Consensus Methodology? Descriptions and Recommendations for Future Consensus Research. *Acad Med* 2016;91(5):663-668 https://doi.org/10.1097/ACM.0000000000001092
41. Abrahamyan L, Boom N, Donovan LR, et al. An international environmental scan of quality indicators for cardiovascular care. *Can J Cardiol* 2012;28(1):110-118 https://doi.org/10.1016/j.cjca.2011.09.019
42. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interview and focus groups. *Int J Qual Health Care* 2007;19(6):349–357 https://doi.org/10.1093/intqhc/mzm042



Chapter 5

Quality aspects of hospital-based physiotherapy from the perspective of key stakeholders: a qualitative study

Steenbruggen, R. A., Dolleman, G.S., Van Heusden-Scholtalbers, L. A., Maas, M.J.M., Hoogeboom, T. J., Brand, P.L.P., van der Wees, P.J. (2022).

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ABSTRACT

Background: For the design of a robust quality system for hospital-based physiotherapy, it is important to know what key stakeholders consider quality to be.

Objective: To explore key stakeholders' views on quality of hospital-based physiotherapy.

Methods: We conducted 53 semi-structured interviews with 62 representatives of five key stakeholder groups of hospital-based physiotherapy: medical specialists, hospital managers, boards of directors, multidisciplinary colleagues, and patients. Audio recordings of these interviews were transcribed verbatim and analysed with thematic analysis.

Results: According to the interviewees, quality of hospital-based physiotherapy is characterised by: (1) a human approach, (2) context specific and up-to-date applicable knowledge and expertise, (3) providing the right care in the right place at the right time, (4) a proactive departmental policy in which added value for the hospital is transparent, (5) professional development and innovation based on a vision on science and developments in healthcare, (6) easy access and awareness of one's own and others' position within the interdisciplinary cooperation, and (7) ensuring a continuum of care with the inclusion of pre- and post-clinical care of patients.

Conclusions: Important quality aspects in the perspective of all stakeholders were an expertise that matches the specific pathology of the patient, the hospital-based physiotherapist being a part of the care team, and the support and supervision of all patients concerning physical functioning during the hospitalisation period. Whereas patients mainly mentioned the personal qualities of the physiotherapist, the other stakeholders mainly focused on professional and organisational factors. The results of this study offer opportunities for hospital-based physiotherapy to improve the quality of provided care seen from the perspective of key stakeholders.

INTRODUCTION

In the organisational structure of a hospital, the position of a hospital-based physiotherapy department can be seen as that of a service-providing or cost centre. A department within an organization that does not directly add to profit but costs the organization money to operate. The department delivers a service to a target group.[1] To develop a high-quality standard of service, a target group centred strategy is needed. Such a strategy begins with defining the target group and its needs and wants.[1,2] The key to delivering high-quality service is to balance stakeholders' expectations and perceptions and to close the gap between these two aspects.[3] Once the goals and perspectives of the stakeholders are understood, potential gaps in meeting their expectations can be explored and solved to ensure providing the required quality.[4]

Stakeholders can be seen as individuals, groups or organisations who have an interest (stake) and the potential to influence the actions and aims of an organisation, project, or policy direction.[5,6] Stakeholder analysis has been developed as a multi-purpose tool in the fields of policy, management, and project implementation. Its usefulness lies in its ability to highlight the importance of actors and interest groups in the policy-making process.[7] Growing evidence indicates that stakeholder engagement in healthcare research contributes to increased relevance of outcomes for patients and stakeholders.[8]

In previous research into quality of hospital-based physiotherapy, we identified a set of 56 quality indicators, condensed into seven quality themes, to describe and assess the quality of hospital-based physiotherapy from the perspective of hospital-based physiotherapists and their managers.[9] However, it is also important to know what the main stakeholders of hospital-based physiotherapy consider quality to be. By identifying key stakeholders of hospital-based physiotherapy within the hospital and including their views and opinions on quality of hospital-based physiotherapy, the quality policy of a physiotherapy department can be better targeted.

Whether the practice of care provided by hospital-based physiotherapists meets the criteria of desirable care and stimulates continuous quality improvement, an understanding of quality enriched with the views of key stakeholders within the hospital is required. The quality of the provided hospital-based physiotherapy care can be assessed with a quality system, and the alignment between performance, strategy, vision, and desired outcomes can be established.[10] Therefore, this study aims to explore key stakeholders' views and opinions on quality of departments of hospital-based physiotherapy.

METHODS

Design and setting

This qualitative study was conducted from October 2020 to June 2021 in three large Dutch hospitals, one academic and two teaching hospitals. The Research Ethics Committee of the

Radboud university medical centre, declared that the study (#2020-6288) did not fall within the remit of the Medical Research Involving Human Subjects Act (WMO). All participants gave their written informed consent.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research. The results of the study will be disseminated to all participants and members of the NVZF (Dutch Association for Physiotherapy in Hospitals) during their annual congress.

Preliminary research

During our previous study,9 hospital-based physiotherapists and their managers were asked to list all stakeholders of hospital-based physiotherapy they considered important. Subsequently, they rated their importance in and influence on hospital-based physiotherapy, on a scale from 1 (minimal) to 9 (maximal). The average scores on the dimensions of importance and influence were plotted on the x and y-axis in a stakeholder matrix (Figure 1). Stakeholders from the quadrants with the highest scores on both axes were considered key stakeholders within the hospital. These included medical specialists (referrers), hospital managers, boards of directors, allied health colleagues, and patients.

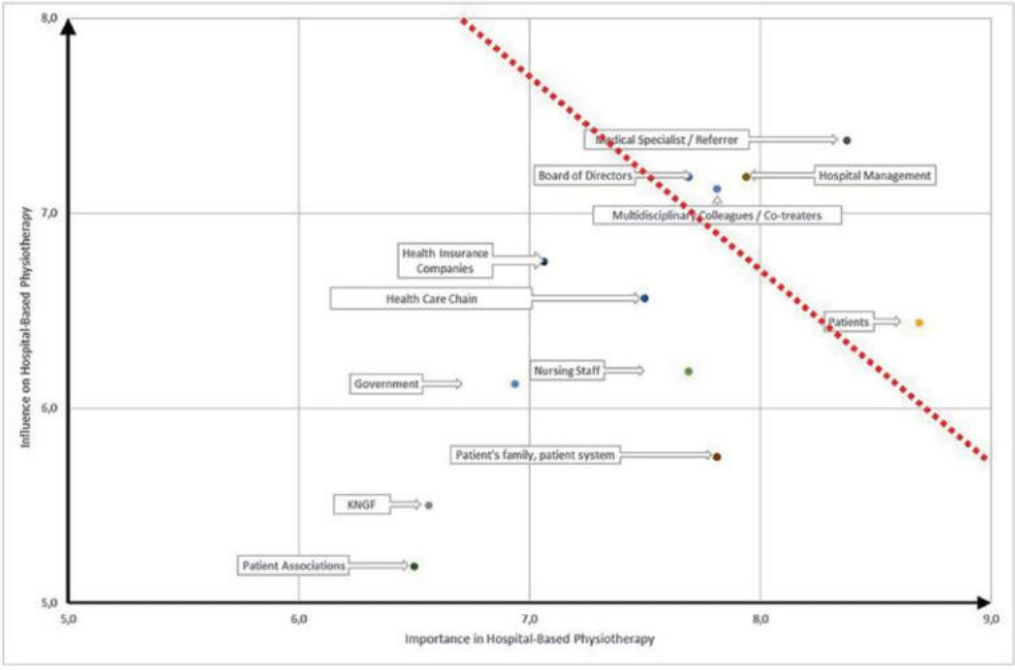


Figure 1; Stakeholder Matrix of Hospital-Based Physiotherapy. Key Stakeholders at the top right.

Interviews

We planned interviews with each of the five key stakeholder groups in the three participating hospitals. In each hospital, a contact person from the physiotherapy department was recruited who coordinated the selection of and appointments with stakeholders in their hospital. Each potential candidate for an interview received an information letter about the study and an informed consent form. Inclusion criteria for members of the Executive Board were that they had allied healthcare as a focus area in their portfolio, for managers and specialists that they were at least among the top 10 largest referrers to physiotherapy within their hospital, and for multidisciplinary colleagues that they collaborated substantially with hospital-based physiotherapists. Patients were included when they had received at least three physiotherapeutic treatment sessions during admission and their admission period was no longer than 1 week ago.

All participants were interviewed individually. Exceptions for a group interview were made if there were several interview candidates within a stakeholder group at the same time. For every type of stakeholder, a specific topic list with interview guide for the semi-structured interview was drawn up by the authors (Appendix 1). Each topic list was piloted several times in test interviews prior to use in this study. Each interview was moderated by the primary researcher [RS], assisted where possible by the contact person of the respective hospital. To ensure that all items on the topic list were covered in each interview, no time limit was set for the interviews. Interviews were audio-recorded and transcribed verbatim.

Analysis

Transcripts of the interviews were checked against the field notes by the interviewer and the contact person of the respective hospital when present. A thematic approach was used to analyse the transcripts.[11] Three researchers [RS,LH,GD] independently studied and inductively coded the transcripts by open coding. Differences in coding were discussed, and a codebook as well as a set of the most meaningful quotations were created based on consensus between the three researchers before the next set of transcripts was analyzed. Saturation was achieved from the moment that list coding, instead of open coding, could be fully used via the codebook. Analysis of transcripts was supported by ATLAS-ti version 8.4.[12] In the last step of the analysis phase, codes were thematically ordered and the themes found were finally categorised according to three organisational levels at which a hospital physiotherapy department can be viewed (i.e., the hospital-based physiotherapist, the hospital physiotherapy department and the hospital).

Trustworthiness

To enhance trustworthiness, the whole research team, all experienced hospital-based physiotherapists and researchers, reviewed and consented with the identified themes and results as found by the three primary researchers. A member check by participants was also carried out. Participants received the preliminary findings and could, when desired, provide feedback on the accuracy of the researchers' interpretation of the data. No substantive comments were received.

Reflexivity

During the study, we were aware of our positions and maintained a reflexive approach from our perspectives as experienced hospital-based physiotherapists and researchers [RS,LH,GD], as a teacher of physiotherapy and experienced researcher [MM] and as (associate) professors in allied health and medical care and experienced researchers [TH,PB,PW]. We tried to obtain balanced and uniform data by having RS conduct all the interviews, supported by a local contact from the hospital in question. During data analysis we were always aware of conflicting codes, which we resolved in consensus. In correctly defining the codes and themes found, and in writing the manuscript, we carefully selected the appropriate language.

This study was reported following the Consolidated criteria for Reporting Qualitative research (COREQ).[13]

RESULTS

62 hospital employees and patients divided into five stakeholder groups were interviewed. Of the total of 53 interviews, 46 were individual and seven were group interviews. Characteristics of the participants are presented in Table 1.

Table1: Characteristics of participants

Group	N	Age Mean (SD)	Experience Years Mean (SD)	Number of Treatments Mean (SD)	Men: Women n:n (%:%)	Duration of Interview (MM:SS) Mean (SD)
Board of Directors	3	60.0 (5.0)	8.7 (6.0)	N/A	2:1 (67:33)	16:08 (04:01)
Hospital Managers	14	49.6 (8.2)	8.8 (7.1)	N/A	7:7 (50:50)	19:01 (03:50)
Medical Specialists	18	45.9 (9.6)	11.9 (8.9)	N/A	11:7 (64:36)	15:16 (03:35)
Multidisciplinary Colleagues	12	33.3 (9.4)	9.4 (6.1)	N/A	0:12 (0:100)	19:54 (06:45)
Patients	15	62.1 (13.5)	N/A	5.4 (2.6)	7:8 (47:53)	10:17 (06:18)
Total	**62**	**48.9 (14.3)**	**10.1 (7.8)**	**5.4 (2.6)**	**27:35 (44:56)**	**15:37 (05:42)**

The most important quality aspects stakeholder groups reported are presented in Table 2.

Table 2: Important quality aspects per stakeholder group in rank order

Patients	Medical Specialists	Hospital Managers	Executive Board	Co-treating Professionals
Engaged and empathic	Expertise that matches the specific pathology of the patient	Proactive	Expert role regarding functional movement within the treatment team (education)	Interdisciplinary collaboration
Giving instructions pre- and post-operatively	Part of care team	Expertise that matches the specific pathology of the patient	Specialist in functional movement	Expertise that matches the specific pathology of the patient
Explanation	Support and supervision of all patients with regard to physical functioning during hospitalisation period	Contribution to multidisciplinary care pathway	Integral part of the care pathway	Within the interdisciplinary team the ability to identify one another on the basis of expertise
Personalised care	Availability	Shorter hospitalisation period	Role/link within the network	Establishing a joint treatment plan
Professional knowledge and expertise	Support with early mobilisation	Expert role regarding functional movement within the treatment team (education)	Visibility	Patient safety

The analysis of all interviews yielded a total of 129 quality aspects which could be classified under the following seven quality themes (table 3).

Table 3: Quality themes for hospital-based physiotherapy according to key stakeholders

Organisational Level	Quality of hospital-based physiotherapy is characterised by:
Hospital-based Physiotherapist	a human approach
	context specific and up-to-date applicable knowledge and expertise
Department of hospital-based physiotherapy	providing the right care in the right place at the right time
	a proactive departmental policy in which added value for the hospital is transparent
	professional development and innovation based on a vision on science and developments in care
Hospital	easy access and awareness of one's own and others' position within the interdisciplinary cooperation
	ensuring a continuum of care with the inclusion of pre- and postclinical care of patients

1) Quality of hospital-based physiotherapy is characterised by a human approach
Mainly patients indicate that they expect a hospital-based physiotherapist with a human approach; a professional who is engaged and empathic, with respect for the needs and demands of the patient, stays calm and gives clear explanations and motivational instructions pre- and post-operatively. The care of the physiotherapist should be personalised and should provide safety and confidence according to patients and co-treating professionals.

- *If, for example, you have to move from the bed to the chair, that they remain calm and clearly tell you that this is what is going to happen and you cannot fall out, and so on, that is very important (Patient 02)*
- *The pep talk, you know with walking and so on, that they say well done, you are doing well, or you know, it is going fantastic, you know. Then you feel a bit of euphoria of, oh yes, well you know then it is going well, so then I think oh well I am doing my best and they see it (Patient 03)*

2) Quality of hospital-based physiotherapy is characterised by context specific and up-to-date applicable knowledge and expertise

According to patients, although they cannot verify this directly, the physiotherapist is expected to have professional knowledge and expertise. Medical specialists and hospital management, who are able to call on this knowledge and expertise directly, add that this expertise should match the specific pathology of the patient, providing more additional in-depth diagnostics. In this way, the physiotherapist can become an important sparring partner for the medical specialist in determining and implementing treatment policy. Or even take over parts of the medical work independently.

- *A good physiotherapist also has a signalling function, so he can also tell us: if this is what you have in mind, then I need this and that. Or that's not feasible in this patient's case. Or I see that it won't work in the long run. So, to put it bluntly, a physiotherapist must not only blindly carry out what we prescribe (Medical Specialist 03).*
- *In some places, the physiotherapist takes over the role of the doctor, for example pelvic floor problems. Or the physiotherapist who participates in the hand centre. There, they are so specialised and differentiated that, based on their knowledge of functional movement, they take over a role from a doctor who only predominantly looks at it from a medical perspective (Hospital Manager 01)*

3) Quality of hospital-based physiotherapy is characterised by providing the right care in the right place at the right time

Availability of the right physiotherapist at the right moment was mainly mentioned by medical specialists and co-treating professionals, as well as having short communication lines with these colleagues. This is particularly to avoid unnecessarily prolonging the patient's stay, often indicating that this could also mean continuing treatment in the evening hours or at the weekend. Hospital management adds the issue of whether a physiotherapist should be embedded in the allied health service or care department, to have more control on this process.

- *The availability or unavailability of the physiotherapist should not lead to longer hospitalization times or longer recovery times for the patient. In other words, the patient should not have to stay in hospital longer because Pete or Jeff or Karen really cannot make it that day (Medical Specialist 09)*
- *Look, I can still see some disadvantages in the process, but that eh, look the hospital is a 24/7 company in principle. And you often see that we are not always set up that way, so also the physiotherapy. There is physiotherapy at the weekend, but it is of a different intensity and that one physiotherapist has to treat more patients in a shorter time than during the week. Yes, I don't think that's continuity (Hospital Manager 14)*

4) Quality of hospital-based physiotherapy is characterised by a proactive departmental policy in which the added value for the hospital is transparent

Hospital management and medical specialists are looking for proactive physiotherapists, both at request and spontaneously, primarily ensuring that the hospitalisation period of patients is shortened. Physiotherapists contributing to the multidisciplinary care pathway, and delivering added value in projects and innovations, were also mentioned. The executive board likes to see the physiotherapist being a specialist in issues concerning physical functioning which affect the whole hospital, and a physiotherapy policy that dares to make result-oriented agreements with the organisation.

- *Then I expect a proactive attitude from the um, from the club physiotherapists. That there are sometimes requested, and sometimes unrequested modifications of the consultation (Hospital Manager 05).*
- *Physiotherapy is part of the treatment team that helps patients. The difference lies in the expert role regarding functional movement that is taken up by this team. In practice with patients, and also in the active participation in treatment policy, and daring to make outcome agreements concerning interventions within certain patient categories (Executive Board 01)*

5) Quality of hospital-based physiotherapy is characterised by professional development and innovation based on a vision on science and developments in care

From the perspective of what is best for their patients, medical specialists expect physiotherapy to adhere to the most recent guidelines and, where necessary, to conduct and to lead their own scientific research. Boards of directors and hospital management also expect this, but more from the perspective of business economics and patient satisfaction, by balancing scientific evidence and actual healthcare needs.

- *And now the physiotherapist as part of allied health care, supports the medical field, so to speak. And I think that in the future, it should be the other way round, with much more focus on healthy exercise, physical activity, and nutrition. And then to consider what the medical specialist can still do for you (Medical Specialist 12)*
- *If you talk about academic physiotherapy, you have to emphasise the renewal and innovation of your training, but also the innovation of your professional field, and research is necessary for this. And also, to look at what is evidence for and what is not (Executive Board 03)*

6) Quality of hospital-based physiotherapy is characterised by easy access and awareness of one's own and others' position within the interdisciplinary cooperation

Being an inherent part of the care team, giving support and supervision to all patients' physical functioning during the hospitalisation period, and supporting early mobilisation, was mentioned by medical specialists. Hospital management and the executive board expect an expertise regarding physical functioning in relation to daily practice of the patient. Interdisciplinary collaboration was mentioned by co-treating professionals, as well

as the ability to identify one another based on an expertise within the care team, leading to a joint treatment plan for the patient.

- *Well, because at the moment the doctor is certainly not going to do all the exercises with the patient, and neither will the nurses. So, who is going to do it? So no, I think the physiotherapist is really an inherent part of running your department (Medical Specialist 11)*
- *Movement and mobility, how incredibly important that is for mental and physical recovery. And I think physiotherapists, because of their expertise, but also because of their practical attitude, are very, um, approachable for most of our patients and they can more easily make the link to daily practice (Medical Board 02)*

7) Quality of hospital-based physiotherapy is characterised by ensuring a continuum of care with the inclusion of pre- and post-clinical care of patients.

Being visible as an integral part of the care team and the care pathway within the network of pre- and post-operative care around the hospital, was seen as a key quality aspect by the board of directors, hospital management and medical specialists. This ensures a continuum of care, which extends beyond the admission. Important issues here are how to link with external physiotherapists, and how to ensure a proper transfer to other healthcare professionals.

- *I think continuity is important - and that is both preoperative and postoperative. What I think is important here, what I'm noticing now, is that you have to determine how you function in the network, so that you, how do you link up with peripheral or, indeed, external physiotherapists? I think that eventually, people leave the hospital, of course, and then you just don't fall under hospital-based physiotherapy anymore, so if there is a good transfer of this and also the other way round, I think that is an important factor (Medical Specialist 07)*
- *I think a huge added value for us is that the transition to primary care or to a rehabilitation center or other institutions is seamless. That we simply deliver people well, so to speak (Hospital Manager 06)*

DISCUSSION

Major findings

This study aimed to record views and opinions of key stakeholders within the hospital on the quality of hospital-based physiotherapy. Overall, seven quality themes emerged from the data analysis, reflecting that the quality of hospital-based physiotherapy is characterised by: (1) a human approach, (2) context specific and up-to-date applicable knowledge and expertise, (3) providing the right care in the right place at the right time, (4) a proactive departmental policy in which added value for the hospital is transparent, (5) professional development and innovation based on a vision on science and developments in care, (6) easy access and awareness of one's own and others' position within the interdisciplinary

cooperation and (7) ensuring a continuum of care with the inclusion of pre- and post-clinical care of patients. Across all seven themes, three aspects stood out that were mentioned most often by all stakeholders: an expertise that matches the specific pathology of the patient, the hospital-based physiotherapist being a part of the care team, and support and supervision of all patients' physical functioning during the hospitalisation period.
Whereas patients mainly mentioned the personal qualities of the physiotherapist, the other stakeholders mainly focused on professional and organisational factors. Patients prefer physiotherapists who show empathy and engagement with their health problem, whereas hospital management would like them to be proactive. Medical specialists focus on expertise that matches the specific pathology of the patient, executive boards on an expert role regarding functional movement within the treatment team. Co-treating professionals emphasise the importance of interdisciplinary collaboration with the hospital-based physiotherapist.

Relation to similar studies

To our knowledge, this is the first study on quality aspects of hospital-based physiotherapy according to its main stakeholders (outside-in perspective). A recent systematic review of quality of care indicators for hospital-based physiotherapy emphasises once more that in this field more research is necessary to provide proven, evidence-based quality measures to fill this gap and determine how indicators can be implemented in everyday practice.[14]
However, part of our findings touches on the conclusion of earlier research into the changing role of the physical therapist in hospitals: an increased emphasis on higher-level skills in patient care and professional interaction and the continuing importance of professionalism.[15,16]
In general, information from a stakeholder analysis can be used to develop strategies for managing these stakeholders, to facilitate the implementation of specific decisions or organisational objectives, or to understand the policy context and assess the feasibility of future policy directions.[17,18] Within health care, this can lead to surprising insights, for example by allowing the target group to have more influence on the therapy offered,[19,20] or to discard a strategy that initially seemed the right one.[21] When stakeholder insights are used to measure quality, it is important that stakeholders also collaborate in measurement development and selection.[22] Regardless of which methodology for quality improvement is used (e.g., Lean or Six Sigma), the most important aspect of successful quality improvement is to achieve stakeholder buy-in.[23]

Meaning and relevance of the findings

The results of this study offer opportunities for hospital-based physiotherapy to improve the quality of provided care seen from the perspective of key stakeholders. This applies to the individual hospital-based physiotherapist, the physiotherapy department and the entire hospital. In this way, with a better understanding of what key stakeholders expect, a quality policy can be worked on more effectively and efficiently, which strengthens the positioning of

a hospital-based physiotherapy department within the hospital organisation. And when this process is combined with the results we found in a previous study in which we asked hospital-based physiotherapists and their managers what they thought were important quality aspects[9], a quality system for hospital-based physiotherapy can be established. This system can provide the local basis for a solid quality cycle, and when applied by more hospitals the possibility may arise to generalise data to nationwide quality indicators for hospital-based physiotherapy that enable benchmarking. Consistently high-quality physiotherapy care can only occur when there is general commitment to understanding all the constructs of the physiotherapy quality package.[24]

Strengths and limitations

The design and analysis of this qualitative study was rigorous and robust. The large number of interviews with experienced professionals and patients, spread across three large Dutch hospitals, also contributes to the generalisability of the findings. It should be noted, however, that smaller district hospitals were not represented in this study. Another limitation is that only stakeholders in the hospital, and no external stakeholders were interviewed.

A key limitation is the extent to which the results of this qualitative study can be generalised or transferred to other contexts.[25-27] Checklists to assess transferability of qualitative research do not exist.[28,29]

Seen from the perspective of our design and analysis, extrapolation of our results to the Dutch situation of hospital-based physiotherapy should be possible. From an international perspective, this is more complex because our data apply to the Dutch system and are difficult to translate to other countries due to differences in the health care system. The positioning of hospital-based physiotherapy may vary, depending on this amount of difference.

Suggestions for further research

To obtain a complete understanding of quality expectations of hospital-based physiotherapy, stakeholders outside the hospital qualified as less important in the preliminary research of this study, like health insurance companies, professional and patient associations and general practitioners, could be investigated additionally. Also, to support the findings of this study, additional research could be done in other settings and countries.

Conclusion

According to key stakeholders of hospital-based physiotherapy, important quality aspects were (1) an expertise that matches the specific pathology of the patient, (2) the hospital-based physiotherapist being a part of the care team, and (3) the support and supervision of all patients concerning physical functioning during the hospitalisation period. Seven quality themes emerged from the data analysis of these stakeholders' groups by which quality of hospital-based physiotherapy is furthermore characterised. Whereas patients mainly mentioned the personal qualities of the physiotherapist, the other stakeholders mainly

focused on organisational factors. The results of this study offer opportunities for hospital-based physiotherapy to improve the quality of provided care seen from the perspective of key stakeholders.

Appendix 1: Used Topic Lists

Board of Directors

- There is a department of hospital-based physiotherapy in your hospital. What do you think her specific role is?
- How can the physiotherapy department differentiate itself in this role?
- What benefits does your hospital derive from the physiotherapy department, both within and outside the healthcare sector?
- In your opinion, are there any disadvantages to the use of hospital-based physiotherapy in your hospital?
- What are the positive effects of the hospital physiotherapy department?
- What negative effects do you want the hospital physiotherapy department to have resolved as quickly as possible?
- When is hospital-based physiotherapy an integral part of the entire care process in your hospital?
- What do you consider to be the quality of hospital-based physiotherapy?

Hospital Management

- A department of hospital-based physiotherapy works within your organisational unit. In your opinion, what is its specific role?
- How can the physiotherapy department distinguish itself in this role?
- What benefits does your organisational unit benefit from the physiotherapy department?
- In your opinion, are there any disadvantages to the deployment of hospital-based physiotherapy in your organisational unit?
- What are the positive effects of the hospital physiotherapy department?
- What negative effects do you want the department of hospital physiotherapy to have resolved as quickly as possible?
- When is hospital-based physiotherapy an integral part of the entire care process in your hospital?
- When would you decide to hire more or less hospital-based physiotherapy?
- What do you consider to be the quality of hospital-based physiotherapy?

Medical Specialists

- You / your specialism refers a lot to hospital-based physiotherapy: what is the purpose of this?
- What interest do you / your specialism have in the physiotherapy department?
- What do you think characterizes a good physiotherapy department?
- Would you / your specialism be able to do without physiotherapy? If so, why? If not: why not?

- On which reasons would you call in more hospital-based physiotherapy?
- On which reasons would you use less hospital-based physiotherapy?
- What do you consider to be the quality of hospital-based physiotherapy?

Multidisciplinary Colleagues

- You cooperate with hospital-based physiotherapy in the treatment of patients. How do you experience this?
- What value does hospital-based physiotherapy add to the overall treatment plan?
- What should hospital-based physiotherapy do to improve this value?
- Which reasons reduce this added value?
- When would you advocate more/less hospital-based physiotherapy in the integrated treatment plan?
- What, in your opinion, is the quality of hospital-based physiotherapy?

Patients

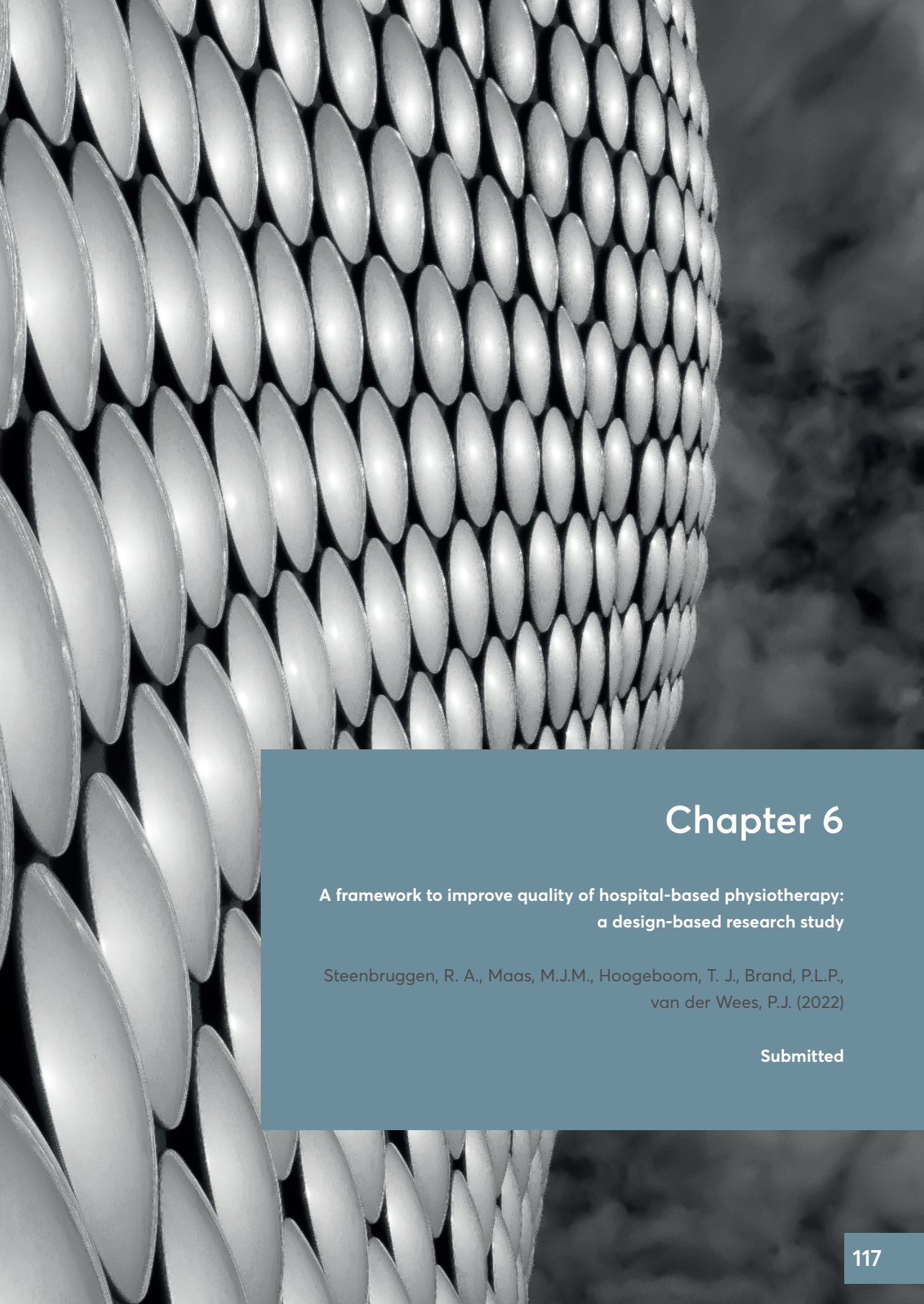
- During your admission, you received treatment from the hospital-based physiotherapist several times. How did you experience this?
- Are there any specific aspects of these physiotherapy treatments that have stuck with you?
- What did you like about your hospital physiotherapist?
- What things could the hospital physiotherapist have done better?
- Has your hospital physiotherapist exceeded your expectations in any way?
- Did you mention hospital physiotherapy after your discharge? If so, in what way?
- What, in your opinion, is the quality of hospital-based physiotherapy?

References

1. Andreasen, A. R., & Kotler, P. (2008). *Strategic Marketing for Non-profit Organizations* (7th edition). Prentice Hall.
2. Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2009). *Services Marketing* (5th edition). McGraw-Hill Education.
3. Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (2009). *Delivering Quality Service* (1st edition). Simon & Schuster.
4. Review, Harvard Business. (2017). *The Harvard Business Review Manager's Handbook: The 17 Skills Leaders Need to Stand Out (HBR Handbooks)* (Reprint edition). Harvard Business Review Press.
5. Crosby B. (1992). *Stakeholder analysis: a vital tool for strategic managers.* Washington D.C.: USAID.
6. Walt G. (1994). Can interest groups influence government policy? *Health Policy: an Introduction to process and power.* London: Zed Publications.
7. Brugha, R., & Varvasovszky, Z. (2000). Stakeholder analysis: a review. *Health Policy and Planning*, *15*(3), 239–246. https://doi.org/10.1093/heapol/15.3.239
8. Heckert, A., Forsythe, L. P., Carman, K. L., Frank, L., Hemphill, R., Elstad, E. A., Esmail, L., & Lesch, J. K. (2020). Researchers, patients, and other stakeholders' perspectives on challenges to and strategies for engagement. *Research Involvement and Engagement*, *6*(1), 1–18. https://doi.org/10.1186/s40900-020-00227-0
9. Steenbruggen, R. A., van Oorsouw, R., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. (2020). Development of quality aspects for departments of hospital-based physiotherapy: a modified Delphi study. *BMJ Open Quality*, *9*(2), e000812. https://doi.org/10.1136/bmjoq-2019-000812
10. Jones R, Jenkins F. (2011). Key tools and techniques in management and leadership of the allied health professions. Milton Keynes: Radcliffe Publishing Ltd. 2011:1-29
11. Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, *42*(8), 846–854. https://doi.org/10.1080/0142159x.2020.1755030
12. Friese S. Qualitative Data Analysis with ATLAS.ti. London, Sage Publications Ltd; 2012.
13. Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, *19*(6), 349–357. https://doi.org/10.1093/intqhc/mzm042
14. Angel-Garcia, D., Martinez-Nicolas, I., Salmeri, B., & Monot, A. (2021). Quality of Care Indicators for Hospital Physical Therapy Units: A Systematic Review. *Physical Therapy*, *102*(2). https://doi.org/10.1093/ptj/pzab261
15. Lopopolo RB. Hospital restructuring and the changing nature of the physical therapist's role. *Phys Ther*. 1999;79:171–185
16. Lopopolo RB. The effect of hospital restructuring on the role of physical therapists in acute care. *Phys Ther***.** 1997;77:918-936.1
17. Brugha, R. (2000). Stakeholder analysis: a review. *Health Policy and Planning*, *15*(3), 239–246. https://doi.org/10.1093/heapol/15.3.239
18. Heckert, A., Forsythe, L. P., Carman, K. L., Frank, L., Hemphill, R., Elstad, E. A., Esmail, L., & Lesch, J. K. (2020). Researchers, patients, and other stakeholders' perspectives on challenges to and strategies

for engagement. *Research Involvement and Engagement*, *6*(1). https://doi.org/10.1186/s40900-020-00227-0

19. Gallagher, A. L., Murphy, C., Conway, P. F., & Perry, A. (2019). Engaging multiple stakeholders to improve speech and language therapy services in schools: an appreciative inquiry-based study. *BMC Health Services Research*, *19*(1). https://doi.org/10.1186/s12913-019-4051-z
20. Salmi, L., Lum, H. D., Hayden, A., Reblin, M., Otis-Green, S., Venechuk, G., Morris, M. A., Griff, M., & Kwan, B. M. (2020). Stakeholder engagement in research on quality of life and palliative care for brain tumors: a qualitative analysis of #BTSM and #HPM tweet chats. *Neuro-Oncology Practice*, *7*(6), 676–684. https://doi.org/10.1093/nop/npaa043
21. Malik, R. F., Hilders, C. G. J. M., & Scheele, F. (2018). Do 'physicians in the lead' support a holistic healthcare delivery approach? A qualitative analysis of stakeholders' perspectives. *BMJ Open*, *8*(7), e020739. https://doi.org/10.1136/bmjopen-2017-020739
22. Baernholdt, M., Dunton, N., Hughes, R. G., Stone, P. W., & White, K. M. (2018). Quality Measures. *Journal of Nursing Care Quality*, *33*(2), 149–156. https://doi.org/10.1097/ncq.0000000000000292
23. Kumar, A., Nesbitt, K. M., & Bakkum-Gamez, J. N. (2019). Quality improvement in gynecologic oncology: Current successes and future promise. *Gynecologic Oncology*, *152*(3), 486–491. https://doi.org/10.1016/j.ygyno.2018.10.046
24. Grimmer K, Beard M, Bell A, Chipchase L, Edwards E, Fulton I and Gill T (2000): On the constructs of quality physiotherapy. *Australian Journal of Physiotherapy* 46: 3-7
25. Brett Smith (2018) Generalizability in qualitative research: misunderstandings, opportunities and recommendations for the sport and exercise sciences, Qualitative Research in Sport, Exercise and Health, 10:1, 137-149, https://doi.org/10.1080/2159676X.2017.1393221
26. Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies*, *47*(11), 1451–1458. https://doi.org/10.1016/j.ijnurstu.2010.06.004
27. Richie, J. (2021). Qualitative Research Practice: A Guide for Social Science Students and Researchers (2013–12-20). In J. Lewis (Red.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (2013de ed., pp. 263–286). SAGE Publications Ltd.
28. Munthe-Kaas, H., Nøkleby, H., & Nguyen, L. (2019). Systematic mapping of checklists for assessing transferability. *Systematic Reviews*, *8*(1). https://doi.org/10.1186/s13643-018-0893-4
29. Patton, M.Q., 2002. Qualitative Evaluation and Research Methods (p. 489), 3rd ed. Sage, Thousand Oaks, CA.



Chapter 6

A framework to improve quality of hospital-based physiotherapy: a design-based research study

Steenbruggen, R. A., Maas, M.J.M., Hoogeboom, T. J., Brand, P.L.P., van der Wees, P.J. (2022)

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ABSTRACT

Background: A quality framework for hospital-based physiotherapy is lacking. This study aims to design a framework, building on the currently available literature, to improve the quality of hospital-based physiotherapy.

Methods: A multidisciplinary panel of six representatives of hospital-based physiotherapy and their key stakeholders (patients, medical specialists, hospital management and professional association) was set up. We used brainwriting to sample ideas and the 'decision-matrix' to select the best ideas.

Results: The first round of brainwriting with an online panel of six experienced participants yielded consensus on seven possible methods for quality improvement of hospital-based physiotherapy: (1) continuing education, (2) feedback on patient reported experience measures and patient reported outcome measures, (3) a quality passport with portfolio, (4) peer observation and feedback, (5) 360 degree feedback, (6) a management information system, and (7) intervision with intercollegiate evaluation. Placing these methods in a decision matrix against four criteria (measurability, acceptability, impact, accessibility) resulted in a slight preference for a management information system, with almost equal preference for five other methods immediately thereafter. The least preference was given to a 360-degree feedback.

Conclusions: In the design of a framework for improving the quality of hospital-based physiotherapy, all seven suggested methods were perceived as relevant but differed in terms of advantages and disadvantages. This suggests that, within the framework, a mixture of these methods may be desirable to even out respective advantages and disadvantages.

Keywords: physiotherapy, hospital, quality, quality improvement, design-based research

INTRODUCTION

Hospital-based physiotherapy can play a significant role in the multidisciplinary treatment of hospitalized patients through the optimalization of functional mobility as an important part of the patient's functional health condition.[1] Good quality treatment is a prerequisite for optimal patient recovery. Quality of hospital-based physiotherapy can be defined as the degree of similarity between criteria of good care (desirable care) and the practice of care (actual care).[2] In other words, delivering high-quality physiotherapy services in a hospital requires striking a balance between expectations and perceptions of patients and key stakeholders, and to close the gap between the two.[3] To develop a high standard of service quality, a target audience-centred strategy is needed that begins with defining the target audience (patients and key stakeholders) and its needs and wants.[4,5]

In previous research, we identified quality aspects for hospital-based physiotherapy both in the eyes of hospital-based physiotherapists and their key stakeholders: patients, medical specialists, hospital managers, executive boards and co-treating professionals. We also noted that globally expanding accreditation instruments to measure quality such as JCI or Qmentum mainly focus on hospital policy and procedures and do not specifically cover a profession such as hospital-based physiotherapy. These instruments do not allow systematic quality improvement of hospital-based physiotherapy departments.[6,7] This justifies the need for a tailored quality improvement (QI) framework for hospital-based physiotherapy.

The aim of this study is to gain insight in which QI methods could form the design of a QI framework, as a foundation for a system to improve the quality of hospital-based physiotherapy in the Netherlands, by combining the insights of hospital-based physiotherapists and their key stakeholders. In this context, information from a stakeholder analysis can be used to develop strategies for managing high-quality physiotherapy services for these stakeholders.[8,9] Ideally, these stakeholders should also be involved in the design, development and selection of measuring instruments for quality improvement.[10,11] This requires the involvement of all parties, brought together in one room.[12,13] In this context, design-based research seems to be an appropriate methodology because it allows for iteratively developing, testing and improving innovative QI program designs together with stakeholders. Design-based research contributes towards both testing and refining theories and improving practice and is a fruitful approach for (re-)designing work-based environments and assessment programs.[14]

METHOD

To comply with the principles of design-based research, we identified relevant stakeholders of hospital-based physiotherapy in QI by conducting a stakeholder analysis.[12,13] We involved all identified key stakeholders in the design process from the start and set up a panel comprising them: a medical specialist, a hospital manager, a hospital-based physiotherapist, a manager of hospital-based physiotherapy, a patient, and a representative from the quality department of the professional association KNGF (Royal Dutch Society for Physiotherapy). Potential participants needed to have active experience with hospital-based

physiotherapy from their respective positions and in participating in representative bodies. We aimed to include a total of six participants for this panel, who were approached for participation via the authors' formal and informal networks. Due to COVID-19 restrictions, the panel session was planned online. A week before the panel meeting, the participants received specific information about the nature and goal of the panel meeting. In addition, the panel received information about the quality themes found in previous research (Box 1),[6,7] together with the request to contemplate about a method to improve the quality of hospital-based physiotherapy based on these themes.

Box 1: Quality Themes for hospital-based physiotherapy

Quality Themes Inside-Out	**Quality Themes Outside-In**
The department of hospital-based physiotherapy:	*The quality of hospital-based physiotherapy is characterised by:*
has a culture of continuous learning, improvement and open dialogue	a human approach
ensures the promotion of staff expertise that is consistent with the demand for care	context-specific and up-to-date applicable knowledge and expertise
uses a planning & control cycle to work on achieving its goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy	providing the right care in the right place at the right time
forms an integral part of the overall patient and hospital process	a proactive departmental policy in which the added value for the hospital is transparent
implements a patient-oriented policy	professional development and innovation based on a vision on science and developments in care
systematically ensures that the physiotherapeutic interventions undertaken by its employees are of the highest possible quality	easy access and awareness of one's own and others' position within the interdisciplinary cooperation
collects feedback on its performance from stakeholders and staff and takes action that is based on this feedback	ensuring a continuum of care with the inclusion of pre-and post-clinical care of patients

The panel session was moderated by the first two authors [RS, MM]. After an introduction to the background, purpose, and procedure of the meeting, the panel members participated in a brainwriting session, followed by the construction of a decision matrix. According to DESIGN-BASED RESEARCH principles, these methods are the two most appropriate techniques in the initial phase of a design process.[12,15] Convening and consulting a voluntary expert panel is exempt from medical ethical review under Dutch law. All panel members provided written informed consent.

Brainwriting

Brainwriting is an idea generation technique in which participants write down their ideas about a particular question for a few minutes without talking. Then, each person passes his or her ideas to the next person who uses them as a trigger for adding or refining their own ideas.[12] We used the 6-3-5 brainwriting method. Each panel member was asked to individually write down 3 ideas about a method to improve the quality of hospital-based physiotherapy, based on the previously identified quality themes (Box 1).[6,7] After 5 minutes, each panel member was asked to pass their own form to another panellist so that 6 rounds of idea generation could take place. With each new round, participants were asked to involve or to build on previous panellists' ideas. Because this was an online session, due to Covid restrictions, we used Padlet[16]. Padlet is an online environment to gather opinions or ideas. During the digital brainwriting sessions, the research question was always visible for the participants to ensure that all panellists worked towards the same goal. After the final round, each participant received their original form in return and was asked to individually identify the best ideas on this form in ten minutes. These ideas were shared with the panel followed by a half-hour panel discussion, aiming for consensus on the ideas that were perceived sufficiently appropriate to proceed to the next part of the meeting, namely the decision matrix. The panel discussion was video recorded for analysis purposes.

Decision Matrix

To decide which of the remaining ideas from the first part would be the most suitable, we placed each idea in a decision matrix against a set of decision criteria. For this purpose, the panel was first asked to generate ideas for decision criteria, and then to decide by total consensus which of these criteria should be used. After consensus was reached, the matrix form was filled with ideas and criteria, and each panel member was given half an hour to individually test each idea against each criterion. This was done both quantitatively (providing scores on a Likert scale of 1 (very inappropriate) to 5 (very appropriate)) and qualitatively (by writing comments in text boxes). Finally, all panellists sent their form to the moderators and explained their ideas what the design of a framework should look like to the panel. This marked the end of the panel session. All panel discussions were video recorded for analysis purposes.

Analysis

Quantitative data from the decision matrix were analysed and described using Microsoft Excel. Written qualitative data from the decision matrix were collected and added as comments to the scores. These comments were checked by both moderators against the various video recordings and supplemented if they highlighted new perspectives. This resulted in a final decision matrix. The research team developed a QI framework design by discussing the outcomes of this final decision matrix. The video recordings were also used to check afterwards whether all procedures during the panel session had been conducted correctly.

Reflexivity

During the study, we were aware of our positions and maintained a reflexive approach from our perspectives as experienced hospital-based physiotherapist and researcher [RS], as a teacher of physiotherapy and experienced researcher [MM] and as (associate) professors in allied health and medical care and experienced researchers [TH,PB,PW]. We tried to obtain balanced data by having RS conduct the panel, supported by MM. To encourage trustworthiness, a member check of the final decision matrix with all participants was carried out.

RESULTS

The online panel session took place in December 2021 with six participants: a medical specialist (cardiology), a hospital manager (orthopaedics), a hospital-based physiotherapist, a hospital-based physiotherapy department manager, a patient, and a representative of the quality department of the professional association (Royal Dutch Society for Physiotherapy) (Table 1).

Table 1: Characteristics of panel

Member	Gender	Age	Experience Years	Hospital	Relationship to hospital-based physiotherapy
Medical Specialist (Cardiology)	Male	32	7	General Teaching	Referrer to hospital-based physiotherapy
Hospital Manager (Orthopaedics)	Male	62	24	General Teaching	Former hospital-based physiotherapist managing major referring specialisms
Hospital-based Physiotherapist	Male	34	14	Academic	Active hospital-based physiotherapist
Hospital-based Physiotherapy Department Manager	Male	59	27	Academic	Active manager of a major academic department of hospital-based physiotherapy
Patient representative	Male	60	19	Academic	Experienced as a patient of hospital-based physiotherapy
Representative of professional Association	Female	52	11	N/A	Policy officer of the Dutch Association of Physiotherapy in Hospitals

The brainwriting session yielded consensus on seven QI methods: (1) continuing education, (2) feedback on PREMs and PROMs, (3) a quality passport with portfolio, (4) peer observation and feedback, (5) 360 degree feedback, (6) a management information system and (7) intervision with intercollegiate evaluation (Table 2).

Table 2: Overview of quality improvement methods with perceived advantages and disadvantages

Method	Objective	Construction	Advantages	Disadvantages
Continuing Education	To keep professionals up to date on the latest advances in their field and to afford an opportunity to explore other areas in this field	There are many types of continuing education for professionals, individually or in groups, like: post-secondary degree programs, professional certifications, independent studies, professional events, on-the-job training, research and online courses	Useful Acceptable	Difficult to evaluate the impact on QI Available budget can be a bottleneck
Feedback PREMs and PROMs	To foster improvement and adopt best practices based on patient related outcomes and experiences, and in addition clinical outcomes, to further improve these outcomes	Reports coming directly from patients about how they feel or function in relation to a health condition and its therapy without interpretation by healthcare professionals or anyone else	Excellent in providing easily accessible data from a (national) database	Confrontation of the individual professional Effort and cost to setup a (national) database
Quality Passport with Portfolio	To establish a readable classification at a certain level indicating the quality of the professional on the basis of experience and education	Implementation of a database that shows the relevant experience and education received by each professional	Easy to measure Uncovers gaps in knowledge and skills Fast to apply	Knowledge and skills needs to be in good order for proper functioning

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Peer Observation and Feedback	To observe each other's practice and learning from one another, to support the sharing of best practice and build awareness about the impact of your own professional conduct	After a predetermined time period and feedback list the observer may share his/her observations, in the form of a written report accompanied by verbal feedback	Promotion of a culture of feedback and dialogue Little costs	Hard to measure (more qualitative than quantitative data) Might be perceived as threatening
360 Degree Feedback	To offer employees more varied multidisciplinary input. To give employees timely recognition and a better understanding how they can improve	A process where the employees receive feedback from peers working closely with them - co-workers, managers, direct reports. The feedback is usually anonymous and completely confidential	Multidisciplinary feedback	Unwillingness to critically appraise multidisciplinary colleagues leading to limited reliability
Management Information System	To provide information for decision making on planning, initiating, organizing, and controlling and to provide a synergistic organization in the process.	The Management Information System design should give, after determining the input to be fed to the system, reports in line with the organization structure and needed outcomes. In this case specifically on critical indicators for hospital-based physiotherapy.	Data already available in other systems	Hard to establish which critical process indicators should be implemented
Intervision with intercollegiate Evaluation	To share problems, questions, concerns with colleagues in order to develop the skills and insights of professionals who try to look for solutions.	A structured method of group consultation. During a meeting one participant is in the centre with a practical situation from his or her work. The participant describes clearly for what aspects he or she wants input (help) from the others	Accepted method Easy to introduce in work routines	Hard to measure (more qualitative than quantitative data) Might be perceived as threatening

At the start of the next round of the decision matrix, an overall consensus was reached on four criteria against which the seven ideas generated would be assessed: measurability (discriminatory power), acceptability (safety and acceptance), impact (focus and efficiency), and accessibility (cost and effort). After all the scores and comments of the participants per possible idea (prototype) and criterion were collected and discussed, the digital panel session was closed. Subsequently, both moderators put all the scores and comments into a comprehensive overview (Table 3).

Table 3: Generalised Decision Matrix

(Quantitative scores in median, qualitative comments: ⊕ = positive, ± = neutral, - = negative, green shaded = highest score on criterion)

Scores on a scale of 1 to 5: 1=very inappropriate 2=inappropriate 3=sufficiently appropriate 4=appropriate 5=very appropriate	**Criterion 1: Measurable (discriminatory power)**	**Criterion 2: Acceptable (safety, acceptance)**	**Criterion 3: Impact (focused and efficient)**	**Criterion 4: Accessible (cost, effort)**
Method 1: Continuing Education ***Median Score: 4,0***	**Score: 3** ± Number of courses is measurable, but doubts about discriminatory power - Measurable to what extent someone has taken it, not what someone has learned from it	**Score: 4** ± This will be acceptable for everyone - If you have to make certain development according to departmental plan, possibly not acceptable	**Score: 4** ± If it also concerns non-physiotherapeutic skills, such as PDCA ± Training is the 1st step, implementation/ application the 2nd step - This does not give a good impression of the quality (attendance obligation versus result obligation)	**Score: 4** ± Low effort, high cost ± Costs are manageable at team level - Dependent on departmental budget

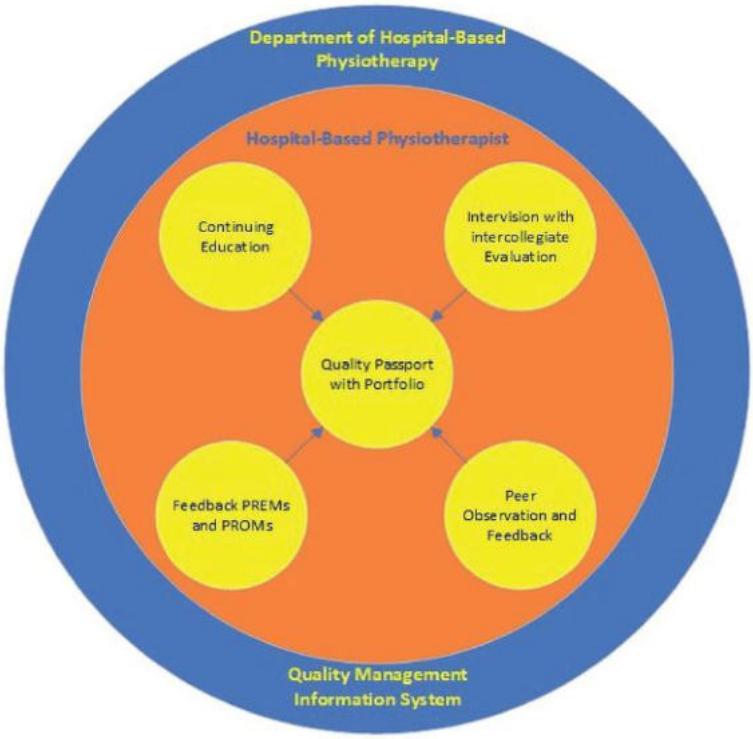
Method 2: Feedback PREMs and PROMs ***Median Score: 4,0***	**Score: 5** ⊕ If PREMS and PROMS are collected per person or per department, this can be easily measurable	**Score: 3** ± In team with a "just-culture" acceptable ± Does require guidance and explanation - This can produce confrontational data	**Score: 5** ± This is very focused, gives a good picture. Can take a lot of effort to retrieve this data. ± Easy and targeted, condition is a good set of prems and proms	**Score: 3** ± Does require some effort and decisiveness from a department - Set-up can entail a lot of effort/work and a lot of costs
Method 3: Quality passport with portfolio ***Median Score: 4,0***	**Score: 5** ⊕ If knowledge and skills for quality passport are tested annually, this can be easily measured	**Score: 4** ⊕ When knowledge and skills are in good order, this may not be a problem	**Score: 4** ⊕ Experience shows that this works well and uncovers gaps in knowledge and skills ⊕ Easy and fast to apply	**Score: 3** ⊕ Little effort, little cost
Method 4: Peer Observation & Feedback ***Median Score: 4,0***	**Score: 4** ⊕ Requires uniform application ± If this is done using rubrics, this can be easily measured - More qualitative by nature	**Score: 3** ⊕ Can also promote a culture of feedback and dialogue ⊕ In team with a "just-culture" acceptable. Also, acceptable if you manage security well (e.g., anonymously) ± Requires explanation and experience - Can be threatening to have a look behind the scenes	**Score: 5** ⊕ Very direct and efficient way ⊕ Peer Feedback is often considered to be very valuable, especially when adding a feedback course ⊕ Easy to use and targeted	**Score: 4** ± Little cost, some effort - Team leader must be the driving force, is a risk for success

Method 5: 360 degree feedback ***Median Score 3,0***	**Score: 3** - The degree to which someone is willing to ask for feedback has a great influence on the result - More qualitative by nature - Requires training, experience: colleagues have difficulties with this	**Score: 3** ± In team with "just-culture" acceptable ± Dependent on free choice in this - Not everyone will find it convenient to collect feedback	**Score: 4** ⊕ Is multidisciplinary feedback (only valuable alongside peer feedback) ± Provided it is performed well - Pleasing each other can distort	**Score: 4** ± Little cost, some effort - Difficult to complete, difficult to ask whom to ask
Method 6: Management Information System ***Median Score: 4,5***	**Score: 5** ⊕ Pre-eminently measurable matters ⊕ Establish the Critical Process Indicators as a team and include them in the annual development discussion - What are those Critical Process Indicators?	**Score: 4** ⊕ This data is already being collected ± It is a little unclear which Critical Process Indicators are involved; this is a determining factor for this criterion	**Score: 3** ⊕ Agreements are recorded ± Difficult to estimate - Says little about quality	**Score: 5** ⊕ Is already there, no cost, no effort ± Difficult to estimate

Method 7: Intervision with intercollegiate Evaluation ***Median Score: 4,0***	**Score: 3** ± Whether measurable depends on methodology/ score form ± Provided it is carried out properly - More qualitative by nature	**Score: 4** ⊕ Accepted working method ⊕ After some experience - This can be experienced as threatening	**Score: 5** ⊕ Very direct and efficient way	**Score: 4** ⊕ Easy to fit in ± Little cost, but effort

In a member check, all participants agreed individually that this was a correct representation of all that had been discussed and scored. Finally, the result of this study was summarised in the design of a framework for quality of hospital-based physiotherapy (Figure 1).

Figure 1: Design of a Framework for Quality of Hospital-Based Physiotherapy



Quantitative data

The median scores of all the criteria per idea ranged from 3.0 (360-degree feedback) to 4.5 (management information system) (table 3). The median scores of the other five ideas was 4.0. On three of four criteria, the 'management information system' idea received highest scores. Feedback on Patient Reported Experience Measures (PREMs) and Patient Reported Outcome Measures (PROMs), a quality passport with portfolio, and intervision & intercollegiate evaluation scored highest on two of four criteria. Continuing education and peer observation and feedback scored the highest on the criterion of acceptability. The idea of 360-degree feedback was not among the highest scores on any criterion.

Qualitative data

Participants discussed potential advantages and disadvantages of the proposed QI methods, which are summarised in table 2, together with their objectives and construction:

- Participants commented that 'continuing education' would be an acceptable QI method, but that it would be difficult to evaluate the impact on QI, because it is only measurable to what extent someone has taken a course, not what someone has learned from it. Also, an available budget may be a bottleneck for this QI method.
- Concerning feedback on PREMs and PROMs, panellists remarked that the measurability of the method is excellent in providing easily accessible data that are sampled and aggregated in a national database, but feedback of patient experiences and outcomes requires guidance and explanation. The setup of this system especially for hospital-based physiotherapy can entail much effort and costs.
- Comments on a quality passport with a portfolio were mainly positive: easy to measure, it uncovers gaps in knowledge and skills and is easy and fast to apply.
- About peer observation and feedback, participants commented that this QI method provides qualitative rather than quantitative information, that it could be confrontational and threatening to professionals and therefore requires guidance and explanation. But also, this method can promote a culture of feedback and dialogue, works directly and efficiently, and costs little.
- The positive side of 360-degree feedback was highlighted as a form of multidisciplinary feedback, allowing multiple perspectives on professional performance. As a potential disadvantage, participants commented that the information this QI method provides may not always be reliable due to unwillingness of professionals to critically appraise their multidisciplinary colleagues, possibly resulting in overly positive reports.
- The general comment on a management information system was that it is hard to establish which quality outcome indicators should be implemented and whether or not this data is already available in other information systems. But once this system is up and running, the advantages are measurability, little cost and no effort.
- On the idea of intervision and intercollegiate evaluation, participants commented that this is already an accepted direct and efficient working method, which is

easily applicable. But also, this is a system more qualitative by nature and can be experienced as confrontational and threatening by professionals.

DISCUSSION

The goal of this study was to gain insight in which QI methods could form the design of a QI framework, as a foundation for a system to improve the quality of hospital-based physiotherapy in the Netherlands, by combining the insights of hospital-based physiotherapists and their key stakeholders. Out of the seven proposed QI methods, none stood out in ensuring quality improvement. According to the multidisciplinary panel that we consulted, 360-degree feedback was seen as the least suitable QI method and therefore not further exploited as a QI method in this study. Of the other six proposed QI methods, there was a slight preference for a management information system. The panel's scores and their comments reflected similar appreciation for continuing education, feedback on PREMs and PROMs, a quality passport with portfolio, peer observation and feedback, and intervision with intercollegiate evaluation. The panellists established that each QI method has its own advantages and disadvantages (Table 2).

Relation to similar studies

The effects and feasibility of each QI method mentioned by the panel have been described previously in the literature. Overall, these studies suggest positive effects and reasonable feasibility, but also make reservations about each method ranging from the degree of effect, reliability, and validity to efforts with and conditions under which application could be successfull.[17-28] The results of these studies suggest that, when designing a QI framework for hospital-based physiotherapy, a mixture of these methods may be most appropriate because this allows evening out of advantages and disadvantages of each individual method, and because they cover different aspects of professional quality. The result may be a combination of methods that together meet the predefined QI criteria and build a valid and effective framework to improve the quality of hospital-based physiotherapy.
More rigorous research is needed to identify effective and generalizable interventions individually, but also in combination as a multiple method assessment, to improve healthcare quality.[29,30] This may lead to a more multidimensional approach to quality.[31,32]

The prevailing method of the Individual Quality Register of Physiotherapy of the KNGF in primary care is individually based, where each activity aimed at professional development is rewarded with points.[33] For hospital-based physiotherapy, an integrated approach based on a portfolio of activities would be more appropriate. This is in view of the nature of the work of hospital-based physiotherapists, which can be more short-cycled, more acute, more varied and more multidisciplinary than in primary care. Especially in a healthcare environment that promotes the collaboration of administrators and physicians in ensuring the quality of patient care,[34] a multidimensional model also offers advantages in terms

of a more flexible applicability to different disciplines pursuing the same quality goal. Also, because hospital-based physiotherapy is bound to other regulations than in primary care, this flexibility of a multidimensional model offers more options for QI, especially if techniques that are already used in the hospital world, such as the tracer method with peer observation and feedback, are used.[25]

Meaning and relevance of the findings

The results of this study, summarised in the design of a framework for quality of hospital-based physiotherapy (fig. 1), provides a foundation to develop a quality system for hospital-based physiotherapy. For example, a national professional association for physiotherapy can use this framework to develop such a quality system. A quality system comprises a management system and a technical system (methods for IQ). Here, the individual professional manages his own quality efforts in a personal portfolio, which is fed by four types of quality improvement methods. These methods each highlight a different aspect of quality so that a total package is created that fits the described nature of work of hospital-based physiotherapy. The management information system concerns all activities in the field of planning, decision-making, organisation, control, evaluation, motivation, training, and involvement of employees to guarantee and improve quality.[35] Within this management information system, quality indicators found in previous research[6,7] could be implemented.

Strengths and limitations

The composition of a representative panel for hospital-based physiotherapy enables a balanced answer to our research question. Using the principles of design-based research is another strength, as design-based research studies can play an important role in the advancement of theory and practice in designing or redesigning work-based learning environments and assessment programs.[14] Although exact data on its validity and reliability are still lacking, the method of brainwriting has been presented as a novel and efficient alternative to brainstorming that can rapidly inform program implementation at minimal time and cost.[36-38]

We acknowledge the following limitations. Although a design-based research panel can produce collective answers, the achieved consensus is not necessarily accurate; bias can occur in the meeting because one individual's opinion can be overrepresented. Since the panel meeting was not anonymous, respondents may have felt restrained to speak freely, and may have been subject to social desirability bias, especially considering the high scores that were given to the QI methods. Although the panel represented all key stakeholder groups, there was only one representative for each group in the panel, which may have produced selection bias.

A key limitation is the extent to which the results of this design-based research can be generalised or transferred to other contexts. Seen from the perspective of our design and analysis, we think that extrapolation of our results to the Dutch situation of hospital-based

physiotherapy is feasible. From an international perspective, this is more complex because the forces within the health care system differ per country, and the positioning of hospital-based physiotherapy can be quite divergent.

Suggestions for further research

In the search for the right mix of the various QI methods, further studies should investigate what this could look like in terms of impact and feasibility. Within the framework of hospital-based physiotherapy, the QI methods discussed can be further explored, either individually or in certain combinations. If a suitable combination seems to have been achieved, which feeds into a management information system on QI of hospital-based physiotherapy, a follow-up study can be conducted to examine its feasibility and total effect on quality. The main question then is how to measure this quality, and with which quality indicators.

Conclusion

In the design of a framework for improving the quality of hospital-based physiotherapy, a suitable single method for QI does not stand out in this study. 360-degree feedback was considered least suitable. From the other six proposed methods (continuing education, feedback on PREMs and PROMs, a quality passport with portfolio, peer observation and feedback, a management information system and intervision with intercollegiate evaluation), a management information system was slightly preferred. Each of these methods has its advantages and disadvantages and cover various dimensions and aspects of quality and quality improvement This indicates that within a QI framework, a mixture of these methods may be desirable so that individual disadvantages of each method can be offset by the advantages of other methods.

References

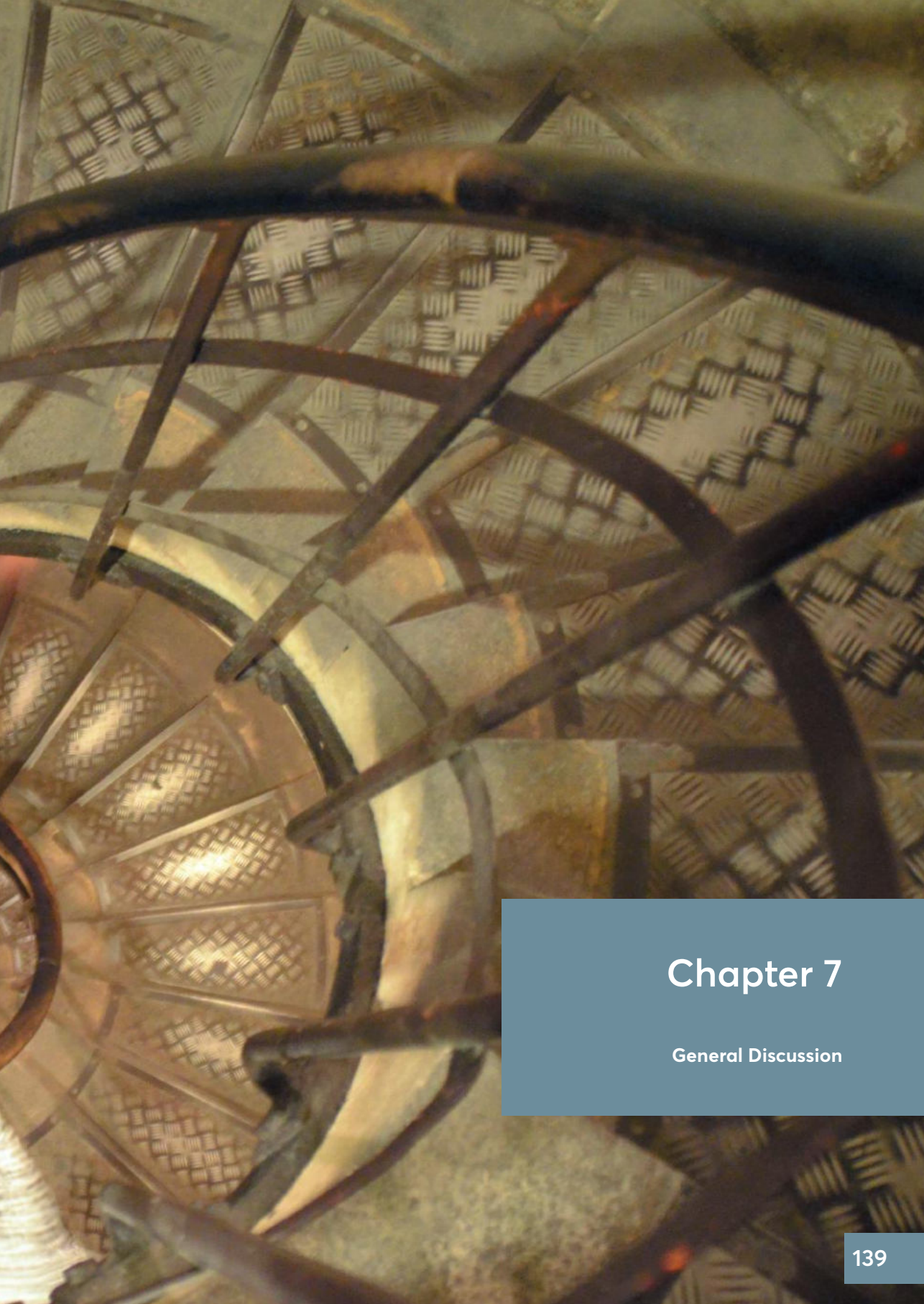
1. Eeuwes M, Engelbert RHH, Geleijn E, et al (2010). Beroepscompetentieprofiel Ziekenhuisfysiotherapeut. 2010.
2. Donabedian A.(2003) An introduction to quality assurance in health care. New York, NY: Oxford University Press
3. Zeithaml VA.(2010) Delivering Quality Service. New York, NY: Free Press
4. Kotler P, Andreasen AR.(2007) Strategic Marketing for Non-Profit Organizations. 7th ed. Upper Saddle River, NJ: Pearson
5. Zeithaml VA, Bitner MJ.(2003) Services Marketing. Maidenhead, England: McGraw Hill Higher Education
6. Steenbruggen, R. A., Van Oorsouw, R., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. V. D. (2020). Development of quality indicators for departments of hospital-based physiotherapy: a modified Delphi study. *BMJ Open Quality, 9*(2), e000812. https://doi.org/10.1136/bmjoq-2019-000812
7. Steenbruggen, R. A., Dolleman, G., Van Heusden-Scholtalbers, L. A., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. V. D. (2022). Quality aspects of hospital-based physiotherapy from the perspective of key stakeholders: a qualitative study. *BMJ Open Quality,* 11(2), e001843. https://doi.org/10.1136/bmjoq-2022-001843
8. Brugha, R. (2000). Stakeholder analysis: a review. Health Policy and Planning, 15(3), 239–246. https://doi.org/10.1093/heapol/15.3.239
9. Heckert, A., Forsythe, L. P., Carman, K. L., Frank, L., Hemphill, R., Elstad, E. A., Esmail, L., & Lesch, J. K. (2020). Researchers, patients, and other stakeholders' perspectives on challenges to and strategies for engagement. *Research Involvement and Engagement, 6*(1). https://doi.org/10.1186/s40900-020-00227-0
10. Baernholdt, M., Dunton, N., Hughes, R. G., Stone, P. W., & White, K. M. (2018). Quality Measures. *Journal of Nursing Care Quality, 33*(2), 149–156. https://doi.org/10.1097/ncq.0000000000000292
11. Kumar, A., Nesbitt, K. M., & Bakkum-Gamez, J. N. (2019). Quality improvement in gynecologic oncology: Current successes and future promise. *Gynecologic Oncology*, 152(3), 486–491. https://doi.org/10.1016/j.ygyno.2018.10.046
12. van 't Veer. J.(2021) Ontwerpen voor zorg en welzijn. Bussum: Coutinho
13. Huzzard, T., Hellström, A., & Lifvergren, S. (2017). Whole System in the Room: Toward Systems Integration in Healthcare. *Health Communication, 33*(7), 800–808. https://doi.org/10.1080/10410236.2017.1314854
14. Dolmans, D. H. J. M., & Tigelaar, D. (2012). Building bridges between theory and practice in medical education using a design-based research approach: AMEE Guide No. 60. *Medical Teacher*, 34(1), 1–10. https://doi.org/10.3109/0142159x.2011.595437
15. Ball, B. J. (2022, 6 June). The Double Diamond: *A universally accepted depiction of the design process.* Design Council. Geraadpleegd op 5 juli 2022, van https://www.designcouncil.org.uk/our-work/news-opinion/double-diamond-universally-accepted-depiction-design-process
16. *Please Wait. . . | Cloudflare.* (2022). Padlet.Com. Geraadpleegd op 5 juli 2022, van https://padlet.com/
17. Van Dulmen, S. A., Maas, M., Staal, J. B., Rutten, G., Kiers, H., Nijhuis-van Der Sanden, M., & Van der Wees, P. (2014). Effectiveness of Peer Assessment for Implementing a Dutch Physical Therapy

Low Back Pain Guideline: Cluster Randomized Controlled Trial. *Physical Therapy,* 94(10), 1396–1409. https://doi.org/10.2522/ptj.20130286

18. Baernholdt, M., Dunton, N., Hughes, R. G., Stone, P. W., & White, K. M. (2018). Quality Measures. *Journal of Nursing Care Quality, 33*(2), 149–156. https://doi.org/10.1097/ncq.0000000000000292
19. Hageman, M. G. J. S., Ring, D. C., Gregory, P. J., Rubash, H. E., & Harmon, L. (2015). Do 360-degree Feedback Survey Results Relate to Patient Satisfaction Measures? *Clinical Orthopaedics & Related Research, 473*(5), 1590–1597. https://doi.org/10.1007/s11999-014-3981-3
20. Maas, M. J. M., Nijhuis-van Der Sanden, M. W. G., Driehuis, F., Heerkens, Y. F., Van der Vleuten, C. P. M., & Van der Wees, P. J. (2017). Feasibility of peer assessment and clinical audit to self-regulate the quality of physiotherapy services: a mixed methods study. *BMJ Open, 7*(2), e013726. https://doi.org/10.1136/bmjopen-2016-013726
21. Maas, M. J., Driehuis, F., Meerhoff, G. A., Heerkens, Y. F., Van der Vleuten, C. P., Nijhuis-van Der Sanden, M. W., & Van der Wees, P. J. (2018). Impact of Self- and Peer Assessment on the Clinical Performance of Physiotherapists in Primary Care: A Cohort Study. *Physiotherapy Canada, 70*(4), 393–401. https://doi.org/10.3138/ptc.2017-40.pc
22. Antonacci, G., Reed, J. E., Lennox, L., & Barlow, J. (2018). The use of process mapping in healthcare quality improvement projects. *Health Services Management Research, 31*(2), 74–84. https://doi.org/10.1177/0951484818770411
23. Prodinger, B., & Taylor, P. (2018). Improving quality of care through patient-reported outcome measures (PROMs): expert interviews using the NHS PROMs Programme and the Swedish quality registers for knee and hip arthroplasty as examples. *BMC Health Services Research, 18*(1). https://doi.org/10.1186/s12913-018-2898-z
24. Rohrbasser, A., Harris, J., Mickan, S., Tal, K., & Wong, G. (2018). Quality circles for quality improvement in primary health care: Their origins, spread, effectiveness and lacunae– A scoping review. PLOS ONE, 13(12), e0202616. https://doi.org/10.1371/journal.pone.0202616
25. Steenbruggen, R. A., Van Heusden-Scholtalbers, L. A., Hoogeboom, T. J., Maas, M., Brand, P., & Wees, P. V. D. (2021). Impact and feasibility of a tailor-made patient communication quality improvement programme for hospital-based physiotherapists: a mixed-methods study. *BMJ Open Quality, 10*(2), e001286. https://doi.org/10.1136/bmjoq-2020-001286
26. Steenbruggen, R. A., Maas, M. J. M., Hoogeboom, T. J., Brand, P. L. P., & Van der Wees, P. J. (2021). The application of the tracer method with peer observation and formative feedback for professional development in clinical practice: a scoping review. *Perspectives on Medical Education, 11*(1), 15–21. https://doi.org/10.1007/s40037-021-00693-6
27. Taylor, B. B., Parekh, V., Estrada, C. A., Schleyer, A., & Sharpe, B. (2013). Documenting Quality Improvement and Patient Safety Efforts: The Quality Portfolio. A Statement from the Academic Hospitalist Taskforce. *Journal of General Internal Medicine,* 29(1), 214–218. https://doi.org/10.1007/s11606-013-2532-z
28. Westby, M. D., Klemm, A., Li, L. C., & Jones, C. A. (2016). Emerging Role of Quality Indicators in Physical Therapist Practice and Health Service Delivery. *Physical Therapy, 96*(1), 90–100. https://doi.org/10.2522/ptj.20150106
29. Davidson, K. W., Shaffer, J., Ye, S., Falzon, L., Emeruwa, I. O., Sundquist, K., Inneh, I. A., Mascitelli, S.

L., Manzano, W. M., Vawdrey, D. K., & Ting, H. H. (2016). Interventions to improve hospital patient satisfaction with healthcare providers and systems: a systematic review. *BMJ Quality & Safety, 26*(7), 596–606. https://doi.org/10.1136/bmjqs-2015-004758

30. Epstein, R. M. (2002). Defining and Assessing Professional Competence. *JAMA, 287*(2), 226. https://doi.org/10.1001/jama.287.2.226
31. Koksma J. 2017. Available from: https://www.medischcontact.nl/nieuws/laatste-nieuws/artikel/kwaliteit-meten-is-een-moreel-oordeel-vellen.htm
32. Berwick, D. M. (2016). Era 3 for Medicine and Health Care. *JAMA, 315*(13), 1329. https://doi.org/10.1001/jama.2016.1509
33. Kwaliteitshuisfysiotherapie.nl. [cited 2022 Jun 5]. Available from: http://www.kwaliteitshuisfysiotherapie.nl
34. Cantiello, J., Kitsantas, P., Moncada, S., & Abdul, S. (2016). The evolution of quality improvement in healthcare: Patient-centered care and health information technology applications. *Journal of Hospital Administration, 5*(2), 62. https://doi.org/10.5430/jha.v5n2p62
35. Wentink T.(2007) Kwaliteitsmanagement, bedrijfsvoering en organisatieontwikkeling. 's-Gravenhage, Netherlands: Boom Juridische Uitgevers
36. Gilmartin, H., Lawrence, E., Leonard, C., McCreight, M., Kelley, L., Lippmann, B., Coy, A., & Burke, R. E. (2019). Brainwriting Premortem. *Journal of Nursing Care Quality, 34*(2), 94–100. https://doi.org/10.1097/ncq.0000000000000360
37. Heslin, P. A. (2009). Better than brainstorming? Potential contextual boundary conditions to brainwriting for idea generation in organizations. *Journal of Occupational and Organizational Psychology, 82*(1), 129–145. https://doi.org/10.1348/096317908x285642
38. Paulus, P. B., Korde, R. M., Dickson, J. J., Carmeli, A., & Cohen-Meitar, R. (2015). Asynchronous Brainstorming in an Industrial Setting. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 57*(6), 1076–1094. https://doi.org/10.1177/0018720815570374



Chapter 7

General Discussion

General Discussion

The general aim of my thesis was to *develop an applicable quality system for hospital-based physiotherapy departments that complements generic hospital quality systems; and in addition, to examine the effects of this quality system on the professional development of hospital-based physiotherapists' competencies and the promotion of quality of hospital-based physiotherapy.* Reflecting on this aim, one can state that this aim has been achieved to a large extent. The findings of the studies in this thesis demonstrate:

- how to use the tracer method as a tool to assess the quality of care provided in a healthcare system with peer observation and formative feedback to improve individual professional competencies;
- what the most important quality themes are for hospital-based physiotherapy from the perspective of hospital physiotherapists (and their managers) and of key stakeholders of hospital physiotherapy, and;
- that we are on our way to finding a suitable method how to work effectively on these quality themes.

However, these findings do not yet mean that we can speak of an 'applicable' quality system that has been tried out and evaluated in the field as stated in the general aim. The end result of this thesis can serve as a framework for a future quality improvement system for hospital-based physiotherapy. The established quality themes and proposed quality methods can be employed at the root of such a system.

Summary of main findings

In the general introduction of this thesis, four research questions were posed, divided over two research tracks: the hospital-based physiotherapist and the department of hospital-based physiotherapy.

Track 1: The hospital-based physiotherapist

The first research question concerning the hospital-based physiotherapist was: what is the impact and feasibility of peer observation and feedback in the form of a tracer on patient communication of hospital-based physiotherapists? ***Chapter two*** described the design and results of a mixed-methods study to answer this question. In this study, we demonstrated that a tailor-made quality improvement program for patient communication of hospital-based physiotherapists may have a significant and relevant impact on participants' communication skills through self-reflection and awareness. We also found that the program was feasible in clinical practice. The results showed that a tailor-made quality program for hospital-based physiotherapists stimulates the development of their professional competence in patient communication. A key component of the feasibility and relevance of this quality improvement program is that it is easy to apply because it is based

on the tracer methodology that is already known in most hospitals.
The second research question within the track of the hospital-based physiotherapist was: to what extent can professional competencies of healthcare professionals, including hospital-based physiotherapists, be positively influenced by using peer observation and feedback in the form of a tracer? Because little is known in the literature about carrying out peer observation and feedback in the form of a tracer from an equal situation between peers, ***chapter three*** reported the results of a scoping review to explore this topic more deeply. The conclusion of this review was that the application of the tracer method with peer observation and feedback holds promise as a tool to promote the professional development of health care professionals. Participants valued the method to stimulate their learning. Because direct observation and formative feedback are familiar to most healthcare professionals and students, and the term 'tracer method' has a growing reputation through the use of globally applied quality systems such as JCI and Qmentum[4,5], existing knowledge and experience in this field could be applied to use the tracer method as a quality improvement instrument for professional performance. When the found facilitators and barriers are sufficiently considered, implementation can become more successful.

Track 2: The department of hospital-based physiotherapy
In the second track, the department of hospital-based physiotherapy, research was carried out to clarify the quality themes of hospital-based physiotherapy through the third research question: Which are the important quality characteristics of a hospital-based physiotherapy department from the perspective of hospital-based physiotherapists and their managers (inside-out perspective), and the perspective of its key stakeholders (outside-in perspective)? ***Chapter four*** focused on this inside-out perspective. Based on input from focus groups, a structured literature review and a Delphi panel, 56 quality indicators for hospital-based physiotherapy were developed, grouped into seven quality themes (Table 1). The identified quality themes, with underlying quality indicators, can serve as the first step towards the development of a quality system for hospital-based physiotherapy in the Dutch context. ***Chapter five*** focused on the outside-in perspective. After determining the key stakeholders of hospital-based physiotherapy based on earlier research, these stakeholders (medical specialists, hospital management, patients, board of directors and multidisciplinary colleagues) were interviewed to determine which quality aspects of hospital-based physiotherapy they considered important. This procedure also resulted in seven quality themes. Whilst patients mainly valued the personal qualities of the physiotherapist, the other stakeholders focused on professional and organisational factors. The results of this study offer opportunities for hospital-based physiotherapy to improve the quality of care provided as seen from the perspective of key stakeholders.

In combining the outcomes of chapter 4 with the results of chapter 5, the foundation for a quality framework for hospital-based physiotherapy can be established (Table 1).

Table 6; Quality Themes for hospital-based physiotherapy from an inside-out and an outside-in perspective

Quality Themes Inside-Out	Quality Themes Outside-In
The quality of hospital-based physiotherapy is characterised by:	***The quality of hospital-based physiotherapy is characterised by:***
a culture of continuous learning, improvement and open dialogue	a human approach
the promotion of staff expertise that is consistent with the demand for care	context-specific and up-to-date applicable knowledge and expertise
a planning & control cycle to work on achieving goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy	providing the right care in the right place at the right time
being an integral part of the overall patient and hospital process	a proactive departmental policy in which the added value for the hospital is transparent
a patient-oriented policy	professional development and innovation based on a vision on science and developments in care
ensuring that the physiotherapeutic interventions undertaken by employees are of the highest possible quality	easy access and awareness of one's own and others' position within the interdisciplinary cooperation
collecting feedback on performance from stakeholders and staff and taking action that is based on this feedback	ensuring a continuum of care with the inclusion of pre-and post-clinical care of patients

Chapter 6 addressed the fourth research question: What is the most plausible design for a quality framework to promote the quality of hospital-based physiotherapy in general, and hospital-based physiotherapists specifically? Based on the quality themes found in the inside-out and outside-in studies, a design-based research study was carried out. Using the design techniques of brainwriting and decision matrix, a multidisciplinary panel of representatives of hospital-based physiotherapy and their key stakeholders ranked different quality improvement techniques which might stimulate and secure quality in these various themes of quality. Six methods (i.e., continuing education, feedback with PREMs and PROMs, a quality passport with portfolio, peer observation and feedback, a management information system and intervision with peer review) were considered comparably useful but differed in terms of advantages and disadvantages. These results suggest that, within a quality framework, a mixture of these methods is desirable to even out mutual advantages and disadvantages and to cover different aspects of professional quality.

Reflection on key themes

Overlooking the main findings of this thesis, four key themes deserve further elaboration:

1. Quality improvement at the level of the individual professional
2. Quality improvement at the level of organisation of hospital-based physiotherapy
3. Methods to improve quality effectively
4. Development of a quality system

Quality improvement at the level of the individual professional

Becoming a member of a healthcare profession not only demands the acquisition of knowledge and skills, but also involves a process of growing into the professional community.[6] This growth at the level of the individual professional can be seen as professional learning: *"The organisation and critical-reflective integration of experiential learning, social learning and theoretical learning, both individually and collectively, aimed at the improvement of both professional practice and the situation of practice. This is where (future) professionals have to learn to reflectively relate theory and practice"*.[7] Within Miller's pyramid of competence (Figure 2), this is known as the highest level of professional competence referring to what performance or quality professionals show in practice.[8] Recent emphasis on professional identity formation, the incorporation of the values and attitudes of the profession into the identity of the aspiring professional, has raised questions about the appropriateness of "Does" as the highest level of aspiration. A fifth and higher level, reflecting the presence of a professional identity, has been proposed as "Is".[9] Behaviours on the fourth and fifth level can only be assessed by direct observation of professionals in the specific healthcare domain.[8,9]

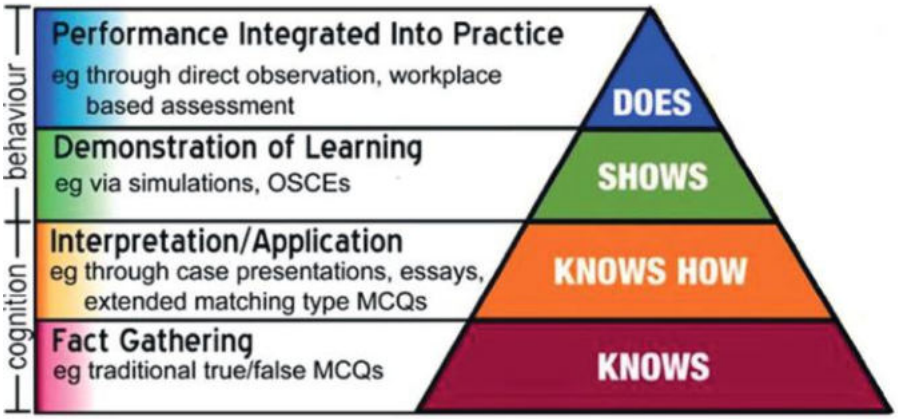


Figure 1: Miller's Pyramid of Competence Evaluation through Performance. Burns and Mehay (2009)

It has been shown that direct observation of health professionals (or trainees) is valid and representative in assessing a broad spectrum of skills and competencies.[10] However, the literature on the effects of direct observation is confusing, because the aim remains unclear: is direct observation intended as summative assessment (quality judgement) or as formative assessment (feedback for professional development)? A growing body of research suggests that this distinction is crucially important.[11] A recent meta-review showed that feedback is more effective if the source is a colleague or supervisor, if it is given more than once, if the feedback is provided both in writing and orally and if it contains concrete goals and an action plan.[12] Studies of feedback acceptance and its impact on subsequent professional development showed that feedback is better accepted and used if the provider is considered reliable and credible by the feedback recipient.[13,14] A one-size-fits-all approach to delivering feedback effectively is unlikely to become available, because feedback is increasingly seen as an intrinsically social exchange between unique individuals.[15,16] The effectiveness of feedback interventions can only be further explored if these interventions are designed systematically, reported transparently, and evaluated rigorously to determine which are most effective and what mechanisms guide their effectiveness.[17] In optimising feedback interventions for early career professionals, future feedback research should move away from generic models and tailor work to specific target audiences.[18]

The literature summarized above appears to be consistent with our findings. We researched behaviour on the highest levels of Miller's pyramid by direct observation, and by oral and written feedback from a colleague from another hospital, which contributes to reliability and credibility. In doing this, we developed a tailor-made program, instead of using a generic model.

Quality improvement at the level of organisation of hospital-based physiotherapy

In the organisational structure of a hospital, the positioning of a hospital-based physiotherapy department can be seen as that of a service-providing and/or cost centre. After all, the department delivers a service to a target group against a particular price, for which a certain quality is expected.[19,20]

Quality of hospital-based physiotherapy can be quantified through quality indicators.[21-23] To develop a high standard of quality, a target group centred strategy is needed that begins with defining the target group (stakeholders) and their needs and wants.[24,25] Once the goals and perspectives of these stakeholders are understood, potential gaps in meeting their expectations can be explored and solved to ensure providing the required quality.[26]

Information from such a stakeholder analysis can then be used to develop departmental strategies to manage these stakeholders, to facilitate the implementation of specific decisions or organisational objectives, or to understand the policy context and assess the feasibility of future policy directions.[27,28]

When stakeholder insights are used to measure quality, it is important that stakeholders also collaborate in measurement development and selection.[29] Regardless of which methodology for quality improvement is used, the most important aspect of successful quality improvement is to achieve stakeholder buy-in.[30]

Although sets of quality criteria have been developed for all kinds of healthcare domains, no such sets have (yet) been described for hospital-based physiotherapy. The research in this thesis was set up to make the first contribution to such quality criteria for hospital-based physiotherapy.[31,32] If we embed these new insights into the framework of an accepted quality system like the European Foundation for Quality Management (EFQM) model, which focuses on the organisational management of people[33], a potential basis for quality management of hospital-based physiotherapy can be created (Figure 2). This shows that the management of the delivery of quality is primarily in the hands of the department itself. In the enabler areas of leadership, people, strategy, partnerships & resources and processes, products & services, the department can organise much of its quality itself, by highlighting the quality themes that have been identified. After that, it is important to continuously ask within the result areas of people, customer, society and business for feedback from the most important stakeholders on how the department's results come across. A feedback loop is then created that requires continuous adjustment of the enablers by learning, creativity and innovation of the department.

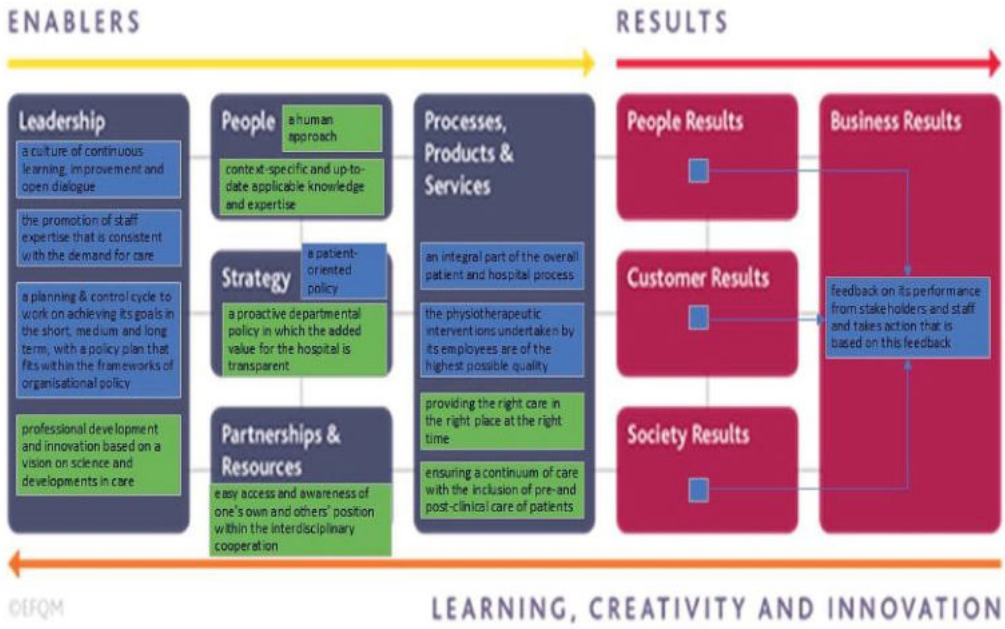


Figure 2: a potential basis for quality management of hospital-based physiotherapy. The results of the inside-out (blue) and outside-in (green) studies were inserted in the EFQM-model.

Methods to improve quality effectively

In 2002, Epstein commented that the assessment of professional competence should not be limited to the traditional assessment of basic skills, but should also include topics such as clinical reasoning, expert judgement, management of ambiguity, professionalism, time management, learning strategies, and teamwork. He argued that such a multidimensional formative assessment would allow a more comprehensive evaluation of professional competence, while maintaining adequate reliability and validity of its outcome.[34] To ensure the effectiveness of these new quality improvement methods, institutional support, reflection and mentoring were advised. Since then, the range of methods to improve the quality of health care has increased considerably. The effects and feasibility of quality improvement methods, such as continuing education, performance feedback with Patient Reported Experience Measures (PREMs) and Patient Reported Outcome Measures (PROMs), a quality passport with portfolio, peer observation and feedback, a management information system and intervision with peer review have been extensively described in the literature.[35-46] The overall conclusion of these studies is that these quality improvement methods have a positive effect on quality and are reasonably feasible, but per method, reservations are also made, varying from the degree of effect, reliability, and validity to efforts with and conditions under which these methods could be successfully applied. In general, it can be concluded that more rigorous research is needed to explore these reservations per quality improvement method so that effective interventions to improve specific elements of healthcare quality can be identified.[47]

Specifically, experienced physiotherapists perceive being observed by colleagues (peers) while doing their job to be the most powerful learning process that enables them to develop their clinical expertise further.[48] It should be noted, however, that this requires proper implementation and guidance paying particular attention to how to give and receive feedback, to prevent feelings of resistance among participants.[49-53] The results of this thesis support and extend findings of the potential value of peer observation and feedback as a quality improvement strategy.[54] Peer observation and feedback (including the use of the tracer method as a source of formative feedback, rather than summative as is customary) on professional performance can be provided in several ways, with different effects.[55] Two RCTs showed that peer assessments were significantly more effective than group discussions in improving quality and in contributing to self-awareness among professionals.[35,56] An evaluation of a peer group model of supervision amongst allied health care workers reported improved skill development.[57] Also, in a primary care setting, both self and peer assessments were shown to be effective in improving the physiotherapist's clinical performance.[39] Overall, peer observation and feedback can be seen as an useful tool to promote continuing professional development.

Development of a quality system

Because accreditation instruments such as JCI and Qmentum cover only the medical and nursing staff as recognisable individual disciplines,[4,5] these instruments do not allow systematic quality improvement of hospital-based physiotherapy departments. This justifies the need for a tailored quality system for hospital-based physiotherapy. To assess and promote the quality of the provided hospital physiotherapy care, the alignment between performance, strategy, vision and desired outcomes needs to be established.[58] Profession-specific quality assessment feedback can help physiotherapists and the profession to identify areas of practice that need improvement. This process has been recommended as an essential component in raising the standards of hospital-based physiotherapy care.[59,60] Because organisational restructuring due to financial issues is common in multidisciplinary hospital care, a quality system for hospital-based physiotherapy should be sufficiently flexible to adapt to organisational changes and the associated changing roles of hospital-based physiotherapists. This continuously changing role of hospital-based physiotherapists places an increased emphasis on their higher-level skills in patient care and interprofessional communication and collaboration, and highlights the ongoing importance of professionalism.[61] When hospital restructuring takes place, physiotherapists, as part of allied health care, need their own conceptual model to describe the effect of hospital restructuring on their professional role.[62,63] Hospitals nowadays struggle how to organise these changing roles: a move from a traditional department structure to program management affects the professional practice of physiotherapists, and both positive and negative effects have been reported of such an organisational change on hospital physiotherapists' professional affect, professional practice, and patient care.[64] A quality system for an individual profession such as hospital-based physiotherapy should be based

on a common framework for effective quality management, which this specific profession can better identify with, and which is independent of hospital restructuring.
Because such a system did not exist, the research in this thesis was designed to contribute to its development. The results of our study in chapter 6 shows that six commonly used methods for quality improvement (continuing education, feedback on PREMs and PROMs, a quality passport with portfolio, peer observation and feedback, a management information system and intervision with intercollegiate evaluation) can be used in such a system. Although these methods appear comparable in terms of impact and feasibility, they differ quite a bit in terms of advantages and disadvantages, and in their coverage of the different aspects of professional quality.[35-46] This suggests that a mixture of these methods is desirable so that different aspects of quality can then be addressed. The challenge is to design a program of different instruments that together build a valid and effective system for quality improvement and thus jointly meets all the criteria used. Such a quality system should be divided into two parts: a technical system and a quality management information system.[65] Within the technical system, the individual professional manages his own quality efforts in a personal portfolio, which is fed by four types of quality improvement methods; continuing education, feedback on PREMs and PROMs, peer observation and feedback, and intervision with intercollegiate evaluation. These methods each highlight a different aspect of quality so that a total package is created that fits the described nature of work of hospital-based physiotherapy. The quality management information system coordinates all activities in the field of planning, decision-making, organisation, control, evaluation, motivation, training, and involvement of employees to ensure and improve quality. We should also examine which indicators can already be extracted from the hospital management information system. Consideration could be given to setting up a similar system for this purpose at a regional or even national level so that the positioning of departments of hospital-based physiotherapy can be evaluated and strengthened utilizing mutual benchmarks. (Figure 3).

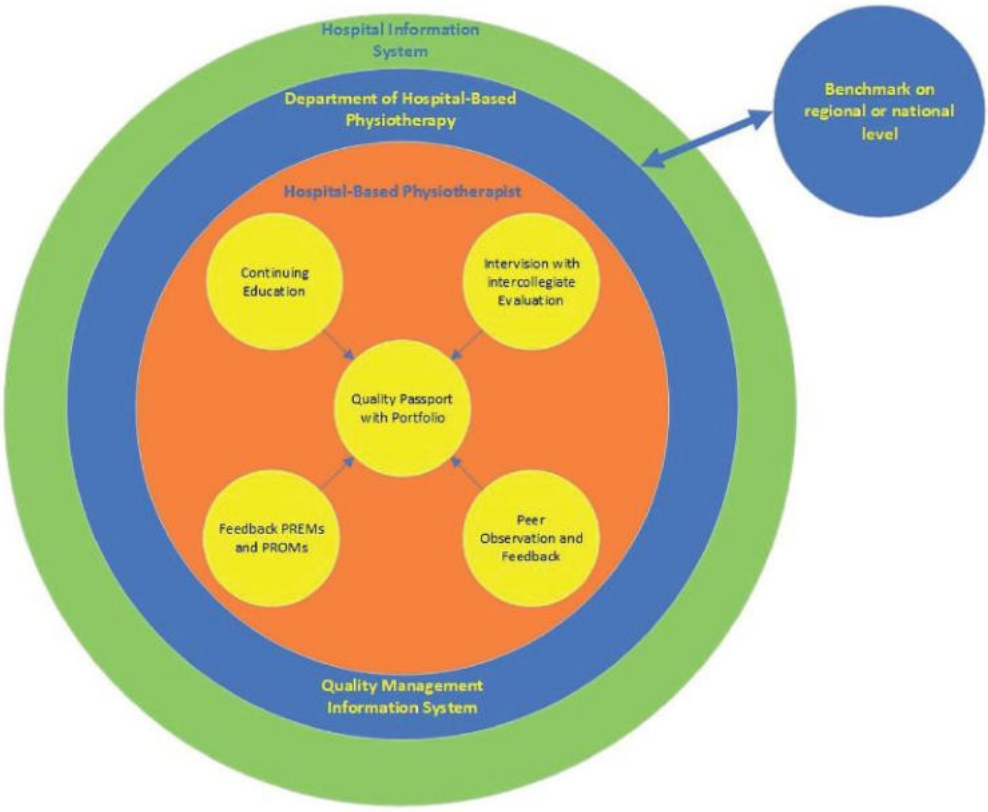


Figure 3: Framework for improving the quality of hospital-based physiotherapy. Within the technical system, the individual professional manages his own quality efforts in a personal portfolio, which is fed by four types of quality improvement methods; continuing education, feedback on PREMs and PROMs, peer observation and feedback, and intervision with intercollegiate evaluation. The quality management information system coordinates all activities in the field of planning, decision-making, organisation, control, evaluation, motivation, training, and involvement of employees to ensure and improve quality. Indicators can also be extracted from the hospital management information system. Setting up a similar system at a regional or even national level makes mutual benchmarks possible.

Methodological considerations

Because the research questions of this thesis largely covered as yet unexplored areas within the domain of hospital-based physiotherapy, we consciously applied exploratory research methods. To ensure trustworthiness of qualitative research four criteria should be considered: credibility, transferability, dependability and confirmability.[66] Also, reflexivity is required to avoid subjective judgements: conscious self-reflection on the part of the researchers.[67] To avoid doubts about trustworthiness in our research, we used well

established research methods, frequent debriefing sessions between researchers, member checks, transparent descriptions of participant groups and methods used in accordance with international criteria such as COREQ, and witnessed our reflexivity.

Specifically, the use of a mixed-methods design in chapter 2 added value to this study: using the qualitative results clarified the quantitative results of the study,[68] and including the opinion of participants in this kind of bottom-up quality improvement initiatives might hold better and more sustainable results than external, top-down regulations.[69-71] Insights gained from this study were used to inform the scoping review in chapter 3 to find the current state of affairs and the direction for the scientific future. Following the recommendations of the methodological framework for scoping reviews,[72-74] we added the optional step of an expert consultation panel, which reinforced this study.

In the second part of this thesis, we entered the uncovered area of specific quality indicators for departments of hospital-based physiotherapy. A combination of exploratory qualitative research was used in the form of a RAND-modified Delphi study, a qualitative study with interviews and thematic analysis, and design-based research. These qualitative methods reinforce each other in the sense that balanced and collective answers are produced in consensus from different perspectives by professionals and stakeholders directly involved. Qualitative studies can play an important role in the advancement of theory and practice in the two broad domains of designing or redesigning work-based learning environments and assessment programs.[75] Achieved consensus in these sort of studies is not necessarily accurate; bias can occur in consensus meetings because one individual's opinion can be overrepresented, or respondents may have felt restrained to speak freely.[76] We have tried to avoid this pitfall as much as possible by using robust designs, following as closely as possible the rules for this research as known from the literature. A key limitation of our findings is the extent to which the results of these qualitative studies can be generalised or transferred to other contexts.[77-81] Although qualitative methods are not designed to demonstrate generalizability, it can be argued that our context-specific results can be used more widely than in the populations studied. This is because we have made organisations taking part in the study, characteristics of participants, data collection methods, numbers and length of data collection sessions and the time period in which the research took place, fully transparent.
Although exact data on validity and reliability of the used innovative methods in our design-based research are still lacking, the method of brainwriting has been presented as a novel and efficient alternative to brainstorming that can rapidly inform program implementation at minimal time and cost.[75,82,83] Whilst the composed panel in this research represented all key stakeholder groups, there was only one representative for each group in the panel, which may have produced selection bias. But seen from the perspective of our design and analysis, we think that extrapolation of our results to the Dutch situation of hospital-based physiotherapy is feasible. From an international perspective, this is more complex because

the forces within the health care system differ per country, and the positioning of hospital-based physiotherapy can be quite divergent, in terms of position within the organisational structure, management and hierarchy in relation to other disciplines such as medical professions.

Implications for practice

Considering the individual professional in practice, the results of this thesis reveal that a tailor-made quality program for hospital-based physiotherapists' communication with patients suggest a significant and relevant impact on participants' communication skills. The key component of the feasibility and relevance of the tailor-made patient communication quality improvement program is that it is easy to apply in hospitals because it is based on the tracer methodology that is already known in most hospitals. Although the evidence is scarce and robust quantitative data are missing, the use of the tracer method with peer observation and formative feedback by healthcare professionals of equal status is potentially useful as a quality improvement instrument. In case of implementing such a method in hospital physiotherapy practice, the facilitators, and barriers for use of the method that we described in Chapter 3 should be sufficiently considered.
Even if a fully developed quality improvement system is not yet in place, departments of hospital-based physiotherapy can already start working with the quality themes we have described. These quality themes can serve as their first step towards a quality system for hospital-based physiotherapy, meeting the hospital-based physiotherapy's need of such a system, and offering opportunities to improve the quality of provided care seen from the perspectives of professionals and key stakeholders. Involving local stakeholders adds to the power of such a quality initiative.

Implications for policy

Because we cannot speak of an 'applicable' quality system yet as stated in the general aim, work still needs to be done within the policy frameworks of the Royal Dutch Society for Physiotherapy (KNGF) and the Dutch Association for Physiotherapy in Hospitals (NVZF) to deliver a first draft basic system. Part of this has already been taken up by the KNGF by including the instrument of the tracer method, introduced in this thesis as a form of peer observation with formative feedback, as a module in their national quality program. However, the greatest effort will have to be made to further develop the framework for improving the quality of hospital-based physiotherapy into a system for quality improvement that can be used in practice. Now that quality aspects of hospital-based physiotherapy have been researched and identified, as well as the most suitable instruments to promote them, it is a logical sequel for KNGF and NVZF, to take this final step by setting out:

- a clear policy in which the desired quality indicators are defined, as an elaboration of

the quality themes and quality framework that we developed,
- how, and with which instruments, and in what proportion these indicators can be measured, monitored, and promoted.
- a clear methodology for testing and evaluating this system

By doing this, a first draft basic quality system for hospital-based physiotherapy can be realised. Within the long-term policy, one can then look forward to a system that not only strengthens the individual department in terms of quality, but also makes mutual strengthening between departments of hospital-based physiotherapy possible utilizing benchmarking. This makes it possible to consolidate the quality policy within an organization, by providing specific context to a generic system, which may also be of interest to other departments in a hospital.

Implications for research

The implication for research arising from the track in which we focused on the hospital-based physiotherapist, is the design and conduct of more extensive and rigorous studies on evaluations of the tracer method in continuous professional development in healthcare, especially in addressing the observed facilitators and barriers. A good starting point would be to generate more robust evaluation designs resulting in quantitative and qualitative data collection on the method to gather more robust evidence of its effects on various aspects of competences of the individual professional. It is worth considering undertaking this research not only in clinical practice but also, for example, in evaluating the education of healthcare professionals so that already at this stage the basic principles of continuous learning are being taught. The tracer method with peer observation and formative feedback can be an important tool to achieve this goal.

Furthermore, the feedback and self-assessment forms used in the studies as questionnaires, should be further adjusted and tested in a follow-up study for their clinimetric properties (reliability, validity, responsiveness), where using independent and more objective assessments of communication skills are needed to substantiate our findings.

The track on hospital-based physiotherapy already partially led to a set of quality indicators in the section called "inside-out" (chapter 4). This set should be supplemented or expanded with the results of the outside-in study, and current work from the field.[84] Subsequently, the complete set of quality indicators should be further assessed for reliability, validity, and acceptability. Next, these indicators should then start to be elaborated in rationale, specifications, type, domain and relationship with other indicators.

Reviewing the list by national and international hospital-based physiotherapy specialists could contribute to these points and the issue of generalisation. It is conceivable that after these steps, with the presented framework as a basis, a foundation could be laid for a method of quality improvement of hospital-based physiotherapy, at least in the Dutch situation.

To obtain a complete understanding of quality expectations of hospital-based physiotherapy, stakeholders outside the hospital, qualified as less important in the stakeholder matrix as presented in chapter 5, could be investigated additionally. These stakeholders include health insurance companies, professional and patient associations and general practitioners. In this way, a complete picture of all quality issues and expectations is created and there are never any surprises when a stakeholder's character changes in terms of importance or influence.
In the search for the right mix of the various quality improvement methods, it can be further investigated which composition of methods performs best in terms of impact and feasibility. And if a suitable composition of quality improvement methods seems to have been achieved, which feeds into a quality management information system for hospital-based physiotherapy, a follow-up study can be conducted to evaluate the effectiveness of the quality system.

Main conclusions

The tracer method with peer observation and formative feedback is a promising tool to promote the professional development of healthcare professionals in clinical practice. Regarding hospital-based physiotherapy, two sets with seven quality themes each embody the core qualitative aspects of hospital-based physiotherapy from the perspective of insiders and outsiders. To establish these themes as the basis for a quality system for hospital-based physiotherapy, various well-founded quality instruments such as a quality passport with portfolio, continuing education, intervision with intercollegiate evaluation, peer observation and feedback, and feedback on PREMs and PROMs, can be used.
A mixture of these methods appears to be desirable so that mutual advantages and disadvantages can be eliminated, and different aspects of professional quality can be covered. With these conclusions, an important foundation can be established for a valid and sustainable quality system for hospital-based physiotherapy.

References

1. Greenfield, D., Travaglia, J., Braithwaite, et al. Unannounced Surveys and Tracer Methodology: Literature Review. Sydney: Centre for Clinical Governance Research in Health, Faculty of Medicine, University of New South Wales; 2007
2. Hinchcliff H, Glennie M, Travaglia J, et al. Patient Journey and Tracer Methodology: Literature review. Sydney: ACSQHC; 2017.
3. Azami-Aghdash, S. Mohammadi, R. (2013). Using Tracer Methodology in Clinical Setting and Research to Measure and Improve Quality. *Journal of Clinical Research & Governance.* (2013) 39-40
4. The Joint Commission. The joint commission big book of policies and procedures for hospitals. Vol 1. Oak Brook, Ill: Joint Commission Resources 2019.
5. https://accreditation.ca/intl-en/accreditation/qmentum/ ; date accessed: April 29th, 2020.
6. Taylor, D. C. M., & Hamdy, H. (2013). Adult learning theories: Implications for learning and teaching in medical education: AMEE Guide No. 83. Medical Teacher, 35(11), e1561–e1572. https://doi.org/10.3109/0142159x.2013.828153
7. Bolhuis, S. (2002). Professioneel leren: wat is het en hoe bevorderen we het? *Tijdschrift voor Medisch Onderwijs, 21*(4), 173–182. https://doi.org/10.1007/bf03056566
8. Miller, G. E. (1990). The assessment of clinical skills/competence/performance. Academic Medicine. https://doi.org/10.1097/00001888-199009000-00045
9. Cruess, Richard L. MD; Cruess, Sylvia R. MD; Steinert, Yvonne PhD Amending Miller's Pyramid to Include Professional Identity Formation, Academic Medicine: February 2016 - Volume 91 - Issue 2 - p 180-185 doi: 10.1097/ACM.0000000000000913
10. Williams, B. W., Byrne, P. D., Welindt, D., et al. (2016). Miller's pyramid and core competency assessment: A study in relationship construct validity. *Journal of Continuing Education in the Health Professions.* https://doi.org/10.1097/CEH.0000000000000117
11. Fromme HB, Karani R, Downing SM. Direct observation in medical education: a review of the literature and evidence for validity. Mt Sinai J Med. 2009;76(4):365–71.
12. Brand PLP, Jaarsma ADC, van der Vleuten CPM. Driving lesson or driving test? : A metaphor to help faculty separate feedback from assessment. Perspect Med Educ. 2021;10(1):50–6.
13. Ivers, N., Jamtvedt, G., Flottorp, S., et al (2012). Audit and feedback: effects on professional practice and healthcare outcomes. In Cochrane Database of Systematic Reviews. https://doi.org/10.1002/14651858.CD000259.pub3
14. Payne, V. L., & Hysong, S. J. (2016). Model depicting aspects of audit and feedback that impact physicians' acceptance of clinical performance feedback. BMC Health Services Research, 16(1). https://doi.org/10.1186/s12913-016-1486-3
15. Ajjawi, R., & Regehr, G. (2018). When I say . . . feedback. *Medical Education, 53*(7), 652–654. https://doi.org/10.1111/medu.13746
16. Sargeant, J., Lockyer, J., Mann, K., et al (2015). Facilitated Reflective Performance Feedback: Developing an Evidence-and Theory-Based Model That Builds Relationship, Explores Reactions and Content, and Coaches for Performance Change (R2C2). *Academic Medicine, 90*(12), 1698–1706. https://doi.org/10.1097/ACM.0000000000000809
17. Brehaut, J. C., Colquhoun, H. L., Eva, K. W., Carroll, K., Sales, A., Michie, S., Ivers, N., & Grimshaw, J.

M. (2016). Practice Feedback Interventions: 15 Suggestions for Optimizing Effectiveness. *Annals of Internal Medicine, 164*(6), 435. https://doi.org/10.7326/m15-2248

18. Mattick, K., Brennan, N., Briscoe, S., Papoutsi, C., & Pearson, M. (2019). Optimising feedback for early career professionals: a scoping review and new framework. Medical Education, 53(4), 355–368. https://doi.org/10.1111/medu.13794
19. Euwes M, Engelbert RHH, Geleijn E, et al. Beroepscompetentieprofiel ziekenhuisfysiotherapeut. Amersfoort, NL: NVZF 2010:25-40.
20. Andreasen, A. R., & Kotler, P. (2008). *Strategic Marketing for Non-profit Organizations* (7th edition). Prentice Hall.
21. Donabedian A. The Definition of Quality and Approaches to Its Assessment: Vol 1. Explorations in Quality Assessment and Monitoring. Ann Arber, MI: Health Administration Press 1980.
22. Donabedian A. The quality of care: how can it be assessed? Jama 1988;260(12):1743-1748 https://doi.org/10.1001/jama.260.12.1743
23. Salzer MS, Nixon CT, Schut LJ, et al. Validating quality indicators: Quality as relationship between structure, process, and outcome. Eval Rev. 1997;21(3):292-309 https://doi.org/10.1177/0193841X9702100302
24. Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2009). *Services Marketing* (5th edition). McGraw-Hill Education.
25. Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (2009). Delivering Quality Service (1st edition). Simon & Schuster.
26. Review, Harvard Business. (2017). *The Harvard Business Review Manager's Handbook: The 17 Skills Leaders Need to Stand Out (HBR Handbooks)* (Reprint edition). Harvard Business Review Press.
27. Brugha, R. (2000). Stakeholder analysis: a review. *Health Policy and Planning, 15*(3), 239–246. https://doi.org/10.1093/heapol/15.3.239
28. Heckert, A., Forsythe, L. P., Carman, K. L., Frank, L., Hemphill, R., Elstad, E. A., Esmail, L., & Lesch, J. K. (2020). Researchers, patients, and other stakeholders' perspectives on challenges to and strategies for engagement. *Research Involvement and Engagement, 6*(1). https://doi.org/10.1186/s40900-020-00227-0
29. Baernholdt, M., Dunton, N., Hughes, R. G., Stone, P. W., & White, K. M. (2018). Quality Measures. *Journal of Nursing Care Quality, 33*(2), 149–156. https://doi.org/10.1097/ncq.0000000000000292
30. Kumar, A., Nesbitt, K. M., & Bakkum-Gamez, J. N. (2019). Quality improvement in gynecologic oncology: Current successes and future promise. *Gynecologic Oncology, 152*(3), 486–491. https://doi.org/10.1016/j.ygyno.2018.10.046
31. Steenbruggen, R. A., van Oorsouw, R., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. (2020). Development of quality aspects for departments of hospital-based physiotherapy: a modified Delphi study. *BMJ Open Quality, 9*(2), e000812. https://doi.org/10.1136/bmjoq-2019-000812
32. Steenbruggen, R. A., Dolleman, G., Van Heusden-Scholtalbers, L. A., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. V. D. (2022). Quality aspects of hospital-based physiotherapy from the perspective of key stakeholders: a qualitative study. *BMJ Open Quality, 11*(2), e001843. https://doi.org/10.1136/bmjoq-2022-001843

33. European Foundation for Quality Management. (2021). *EFQM Home Page*. EFQM. https://www.efqm.org/
34. Epstein, R. M. (2002b). Defining and Assessing Professional Competence. JAMA, 287(2), 226. https://doi.org/10.1001/jama.287.2.226
35. Van Dulmen, S. A., Maas, M., Staal, J. B., Rutten, G., Kiers, H., Nijhuis-van Der Sanden, M., & Van der Wees, P. (2014). Effectiveness of Peer Assessment for Implementing a Dutch Physical Therapy Low Back Pain Guideline: Cluster Randomized Controlled Trial. *Physical Therapy, 94*(10), 1396–1409. https://doi.org/10.2522/ptj.20130286
36. Gleeson, H., Calderon, A., Swami, V., Deighton, J., Wolpert, M., & Edbrooke-Childs, J. (2016). Systematic review of approaches to using patient experience data for quality improvement in healthcare settings. *BMJ Open, 6*(8), e011907. https://doi.org/10.1136/bmjopen-2016-011907
37. Hageman, M. G. J. S., Ring, D. C., Gregory, P. J., Rubash, H. E., & Harmon, L. (2015). Do 360-degree Feedback Survey Results Relate to Patient Satisfaction Measures? *Clinical Orthopaedics & Related Research, 473*(5), 1590–1597. https://doi.org/10.1007/s11999-014-3981-3
38. Maas, M. J. M., Nijhuis-van Der Sanden, M. W. G., Driehuis, F., Heerkens, Y. F., Van der Vleuten, C. P. M., & Van der Wees, P. J. (2017). Feasibility of peer assessment and clinical audit to self-regulate the quality of physiotherapy services: a mixed methods study. *BMJ Open, 7*(2), e013726. https://doi.org/10.1136/bmjopen-2016-013726
39. Maas, M. J., Driehuis, F., Meerhoff, G. A., Heerkens, Y. F., Van der Vleuten, C. P., Nijhuis-van Der Sanden, M. W., & Van der Wees, P. J. (2018). Impact of Self- and Peer Assessment on the Clinical Performance of Physiotherapists in Primary Care: A Cohort Study. *Physiotherapy Canada, 70*(4), 393–401. https://doi.org/10.3138/ptc.2017-40.pc
40. Antonacci, G., Reed, J. E., Lennox, L., & Barlow, J. (2018). The use of process mapping in healthcare quality improvement projects. *Health Services Management Research, 31*(2), 74–84. https://doi.org/10.1177/0951484818770411
41. Prodinger, B., & Taylor, P. (2018). Improving quality of care through patient-reported outcome measures (PROMs): expert interviews using the NHS PROMs Program and the Swedish quality registers for knee and hip arthroplasty as examples. *BMC Health Services Research, 18*(1). https://doi.org/10.1186/s12913-018-2898-z
42. Rohrbasser, A., Harris, J., Mickan, S., Tal, K., & Wong, G. (2018). Quality circles for quality improvement in primary health care: Their origins, spread, effectiveness and lacunae– A scoping review. *PLOS ONE, 13*(12), e0202616. https://doi.org/10.1371/journal.pone.0202616
43. Steenbruggen RA, van Heusden-Scholtalbers LA, Hoogeboom TJ, et al. Impact and feasibility of a tailor-made patient communication quality improvement program for hospital-based physiotherapists: a mixed-methods study. BMJ Open Quality 2021;**10:**e001286. https://doi.org/10.1136/bmjoq-2020-001286
44. Steenbruggen, R.A., Maas, M.J.M., Hoogeboom, T.J. *et al*. The application of the tracer method with peer observation and formative feedback for professional development in clinical practice: a scoping review. *Perspect Med Educ* **11,** 15–21 (2022). https://doi-org.saxion.idm.oclc.org/10.1007/s40037-021-00693-6
45. Taylor, B. B., Parekh, V., Estrada, C. A., Schleyer, A., & Sharpe, B. (2013). Documenting Quality

Improvement and Patient Safety Efforts: The Quality Portfolio. A Statement from the Academic Hospitalist Taskforce. Journal of General Internal Medicine, 29(1), 214–218. https://doi.org/10.1007/s11606-013-2532-z

46. Westby, M. D., Klemm, A., Li, L. C., & Jones, C. A. (2016). Emerging Role of Quality Indicators in Physical Therapist Practice and Health Service Delivery. *Physical Therapy, 96*(1), 90–100. https://doi.org/10.2522/ptj.20150106
47. Davidson, K. W., Shaffer, J., Ye, S., Falzon, L., Emeruwa, I. O., Sundquist, K., Inneh, I. A., Mascitelli, S. L., Manzano, W. M., Vawdrey, D. K., & Ting, H. H. (2016). Interventions to improve hospital patient satisfaction with healthcare providers and systems: a systematic review. *BMJ Quality & Safety, 26*(7), 596–606. https://doi.org/10.1136/bmjqs-2015-004758
48. Petty NJ, Morley M (2009) Clinical expertise: learning together through observed practice. *Manual Therapy, 14(5)*, 461-62.
49. Bhansali, P., & Goldman, E. (2017). A novel peer feedback program of family-centred rounds. *The Clinical Teacher, 15*(6), 478–482. https://doi.org/10.1111/tct.12742
50. Blumenthal, S., Musche-Ambrosius, I., Reicherdt, I., et al. (2019). *German College of General Practitioners and Family Physicians: Mutual Learning Process by Practice Shadowing*, Deutscher Ärzteverlag ZFA Z Allg Med, 95(2), 70-74
51. Borus, J., Pitts, S., & Gooding, H. (2017). Acceptability of peer clinical observation by faculty members. *The Clinical Teacher, 15*(4), 309–313. https://doi.org/10.1111/tct.12681
52. Lalleman, P., Bouma, J., Smid, G., et al. (2017). Peer-to-peer shadowing as a technique for the development of nurse middle managers clinical leadership. *Leadership in Health Services, 30*(4), 475–490. https://doi.org/10.1108/lhs-12-2016-0065
53. McDaniel, C. E., Singh, A. T., Beck, J. B., et al. (2019). Current Practices and Perspectives on Peer Observation and Feedback: A National Survey. *Academic Pediatrics, 19*(6), 691–697. https://doi.org/10.1016/j.acap.2019.03.005
54. Morley M, Petty NJ (2010) Developing an observed practice program for occupational therapists and physiotherapists: reporting the first phase of an action research study. *British Journal of Occupational Therapy,73(8)*, 379-387.
55. Grimaldo F, Marusˇić A, Squazzoni F (2018) Fragments of peer review: A quantitative analysis of the literature (1969-2015). PLoS ONE 13(2): e0193148. https://doi.org/10.1371/journal. pone.0193148
56. Maas, Marjo, J., van der Wees, P., Braam, C., et al (2015). An innovative peer assessment approach to enhance guideline adherence in physiotherapy: a single-masked, cluster-randomized Controlled trial. *Physiotherapy, 95*(4), 600–612
57. Pager SC, Kuipers P, Bell K, et al. Evaluation of a Peer Group Model of Supervision for the Allied Health Workforce in Queensland: A descriptive overview. The Internet Journal of Allied Health Sciences and Practice. 2018 Apr 05;16(2), Article 5.
58. Jones R, Jenkins F. Key tools and techniques in management and leadership of the allied health professions. Milton Keynes: Radcliffe Publishing Ltd. 2011:1-29
59. Hammond R, Lennon S, Walker MF. Changing occupational therapy and physiotherapy practice through guidelines and audit in the United Kingdom. *Clin Rehabil* 2005;19(4):365-371 https://doi.

org/10.1191/0269215505cr784oa

60. Coulson-Thomas C. Re-engineering hospital and healthcare processes. *Health Estate J* 1997;51(7):14-15
61. Lopopolo RB. Hospital restructuring and the changing nature of the physical therapist's role. *Phys Ther* 1999;79(2):171-185 DOI:10.1093/ptj/79.2.171
62. Lopopolo RB. The effect of hospital restructuring on the role of physical therapists in acute care. *Phys Ther* 1997;77(9):918-932 https://doi.org/10.1093/ptj/77.9.918
63. Lopopolo RB. Development of the professional role behaviors survey (PROBES). *Phys Ther* 2001;81(7):1317-1327 DOI:10.1093/ptj/81.7.1317
64. Miller PA, Solomon P. The influence of a move to program management on physical therapist practice. *Phys Ther* 2002;82(5):449-458 DOI:10.1093/ptj/82.5.449
65. Wentink, T. (2007). *Kwaliteitsmanagement, bedrijfsvoering en organisatieontwikkeling* (1ste editie). Boom Lemma.
66. Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63–75. https://doi.org/10.3233/efi-2004-22201
67. Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative Research Methods* (2de editie). SAGE Publications.
68. Hadi, M. A., & Closs, S. J. (2015). Applications of mixed-methods methodology in clinical pharmacy research. *International Journal of Clinical Pharmacy*,635–640. https://doi.org/10.1007/s11096-015-0231-z
69. Grol R. Quality improvement by peer review in primary care: a practical guide. *Qual Health Care* 1994;3:147–52 https://doi.org/10.1136/qshc.3.3.147
70. Butterfield R, McCormick B, Anderson R, et al. Quality of NHS care and external pathway peer review. 2012. Available at: https://www.chseo.org.uk/downloads/report3-peerreview.pdf. Date accessed 10th June 2019)
71. Pronovost PJ, Hudson DW. Improving healthcare quality through organisational peer-to-peer assessment: lessons from the nuclear power industry. *BMJ Qual Saf* 2012; 21:872–5. https://doi.org/10.1136/bmjqs-2011-000470
72. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol. 2005;8(1):19–32.
73. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. Implement Sci. 2010;5(1):1-9.
74. Peters M, Godfrey C, McInerney P, et al Chapter 11: Scoping Reviews. In: JBI Manual for Evidence Synthesis. JBI; 2020.
75. Diana H. J. M. Dolmans & D. Tigelaar (2012) Building bridges between theory and practice in medical education using a design-based research approach: AMEE Guide No. 60, Medical Teacher, 34:1, 1-10, https://doi.org/10.3109/0142159X.2011.595437
76. Howell E. International guidelines for national patient safety incident reporting systems: An expert Delphi review process. BMJ Qual Safety 2017;26(2):150-163 DOI:10.1136/bmjqs-2015-004456
77. Brett Smith (2018) Generalizability in qualitative research: misunderstandings, opportunities and recommendations for the sport and exercise sciences, Qualitative Research in Sport, Exercise and Health, 10:1, 137-149, https://doi.org/10.1080/2159676X.2017.1393221

78. Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies, 47*(11), 1451–1458. https://doi.org/10.1016/j.ijnurstu.2010.06.*004*
79. Richie, J. (2021). Qualitative Research Practice: A Guide for Social Science Students and Researchers (2013–12-20). In J. Lewis (Red.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (2013de ed., pp. 263–286). SAGE Publications Ltd.
80. Munthe-Kaas, H., Nøkleby, H., & Nguyen, L. (2019). Systematic mapping of checklists for assessing transferability. *Systematic Reviews, 8*(1). https://doi.org/10.1186/s13643-018-0893-4
81. Patton, M.Q., 2002. Qualitative Evaluation and Research Methods (p. 489), 3rd ed. Sage, Thousand Oaks, CA.
82. Gilmartin, H., Lawrence, E., Leonard, C., McCreight, M., Kelley, L., Lippmann, B., Coy, A., & Burke, R. E. (2019). Brainwriting Premortem. *Journal of Nursing Care Quality, 34*(2), 94–100. https://doi.org/10.1097/ncq.0000000000000360
83. Heslin, P. A. (2009). Better than brainstorming? Potential contextual boundary conditions to brainwriting for idea generation in organizations. *Journal of Occupational and Organizational Psychology, 82*(1), 129–145. https://doi.org/10.1348/096317908x285642
84. Angel-Garcia, D., Martinez-Nicolas, I., Salmeri, B., & Monot, A. (2021). Quality of Care Indicators for Hospital Physical Therapy Units: A Systematic Review. Physical Therapy, 102(2). https://doi.org/10.1093/ptj/pzab261

Addendum

Summary

Quality systems contribute to the further development of a profession in the healthcare sector. Unfortunately, such a quality system for hospital-based physiotherapy is currently lacking. This is an undesirable situation, given the relevance of hospital-based physiotherapy for optimal patient care in hospitals and the size of this sector. As a result, hospital-based physiotherapists and departments of hospital-based physiotherapy experience insufficient support for their ability to improve their specific professional qualities. This shortcoming is viewed as a potential threat to the quality, positioning and profiling of hospital-based physiotherapy, and indicates the need for the development of a tailor-made quality system for hospital-based physiotherapy.
In this PhD track we investigated the development of an applicable quality system for hospital-based physiotherapy departments that complements generic hospital quality systems. In addition, we examined the impact of this quality system on the professional development of hospital-based physiotherapists' competencies and the promotion of quality of hospital-based physiotherapy.

In the first part of this thesis, we primarily focused on ways to improve the quality at the level of the hospital-based physiotherapists. To do so, we first we adapted an existing quality improvement program that is currently being used among primary care physiotherapists for hospital-based physiotherapists. The primary adaptation we made was that we implemented the tracer methodology, as a method of peer observation and feedback (**chapter 2**). The impact and feasibility of this program, which focused on the physiotherapist's communication with patients, was examined using a mixed-methods approach. Fifty participants from sixteen hospitals were clustered in groups per hospital and linked to an equally sized group in a nearby hospital. Within the groups, fixed couples carried out a two-hour tracer by directly observing each other's daily work routine. This procedure was repeated six months later. We found a significant and relevant impact on participants' communication skills. All participants emphasized the added value of the tracer method and mentioned effects on self-reflection and awareness most. The program was feasible according to participants and organisers. Second, we performed a scoping review (**chapter 3**) to elucidate how, by whom, and with what effect the tracer method is applied as a formative professional development instrument between healthcare professionals of equal status. Four electronic databases were searched for relevant articles, which were screened and assessed for eligibility by two independent researchers. From eligible studies, data were extracted to summarize, collate, and make a narrative account of the findings. The electronic search yielded 1,757 unique studies, eight of which were included as valid and relevant to the aim of the study: five qualitative, two mixed methods, and one quantitative study. Seven studies took place in hospitals and one in general practice, by using the tracer method mainly as a form of peer observation and formative feedback. Most studies evaluated the tracer method's feasibility and its impact on professional development. All but one study reported positive effects:

participants described the tracer method generally as valuable and worth continuing. Although the body of evidence is small and largely limited to the hospital setting, using the tracer method for peer observation and formative feedback between healthcare professionals of equal status appears useful.

In the second part of this thesis, we focused on improving the quality at the level of the hospital-based physiotherapy department. To do this, we first aimed to identify the most important quality indicators for a hospital-based physiotherapy department in the eyes of hospital-based physiotherapists and their managers (**chapter 4**). Based on input from three focus groups and a structured literature review, a first set of 138 potential quality indicators for hospital-based physiotherapy was assembled. After checking this set for duplicates and overlap with international hospital accreditation instruments such as Joint Commission International (JCI) and Qmentum, it formed the starting point of a RAND-modified Delphi procedure. After the Delphi procedure, these 138 potential indicators were reduced to a set of 56 quality indicators for hospital-based physiotherapy. Finally, these 56 indicators were condensed into 7 composite indicators, each representing a quality theme based on definitions of the EFQM (the European Foundation for Quality Management). Following this approach, we found that the quality of hospital-based physiotherapy department is characterised by (1) a culture of continuous learning, improvement and open dialogue, (2) the promotion of staff expertise that is consistent with the demand for care, (3) a planning & control cycle to work on achieving goals in the short, medium and long term, with a policy plan that fits within the frameworks of organisational policy, (4) being an integral part of the overall patient and hospital process, (5) a patient-oriented policy, (6) ensuring that the physiotherapeutic interventions undertaken by employees are of the highest possible quality, (7) collecting feedback on performance from stakeholders and staff and taking action that is based on this feedback.
Subsequently, we explored key stakeholders' views on the quality of the department of hospital-based physiotherapy (**chapter 5**). We did this by conducting sixty-two semi-structured interviews with representatives of five key stakeholder groups of hospital-based physiotherapy: medical specialists, hospital managers, boards of directors, multidisciplinary colleagues, and patients. According to the interviewees, quality of hospital-based physiotherapy is characterised by: (1) a human approach, (2) context-specific and up-to-date applicable knowledge and expertise, (3) providing the right care in the right place at the right time, (4) a proactive departmental policy in which added value for the hospital is transparent, (5) professional development and innovation based on a vision on science and developments in healthcare, (6) easy access and awareness of one's own and others' position within the interdisciplinary cooperation, and (7) ensuring a continuum of care with the inclusion of pre-and post-clinical care of patients. All stakeholders had the same opinion about three important quality aspects: (1) an expertise that matches the specific pathology of the patient, (2) the hospital-based physiotherapist being a part of the care

team, and (3) the support and supervision of all patients concerning physical functioning during the hospitalisation period. Whereas patients primarily mentioned the personal qualities of the physiotherapist, the other stakeholders mainly focused on professional and organisational factors.
Finally, after we identified the quality aspects for hospital-based physiotherapy, we used the set of quality themes to the design of a framework to improve the quality of hospital-based physiotherapy (**chapter 6**). To do so, we set up a multidisciplinary panel, consisting of six representatives of hospital-based physiotherapy and their key stakeholders (patients, medical specialists, hospital management and professional association). Two methods of design-based research were applied with this panel: brainwriting and a decision matrix. The first round of brainwriting yielded consensus on seven possible methods for quality improvement of hospital-based physiotherapy. Placing these methods in a decision matrix against four criteria (measurability, acceptability, impact, accessibility) led to a slight preference for a management information system, with nearly identical preference for the other five methods. The least preference was given to 360-degree feedback. A suitable method for improving the quality of hospital-based physiotherapy did not stand out in this study. Because each of the methods (continuing education, mirroring PREMs and PROMs, a quality passport with portfolio, peer observation and feedback, a management information system and intervision with peer review) has its own unique advantages and disadvantages, and a different perspective to look at quality, a mixture of these methods may be the optimal approach in a quality system to improve the quality of hospital-based physiotherapy.
Considering the individual professional in practice, the results of this thesis show that a tailor-made quality program for hospital-based physiotherapists appears to stimulate the development of professional competence. The key component of the feasibility and relevance of this program is that it is easy to apply in hospitals because it is linked to the tracer methodology that is already known in most hospitals, especially when the observed facilitators and barriers for use of the method are sufficiently considered by implementation in practice.

Now that quality aspects of hospital-based physiotherapy, as well as a framework to promote them, have been studied and are known, the next logical step for policymakers within physiotherapy is to set out a clear policy. In this policy the desired quality indicators can be appointed, as well as how, with which instruments and to what extent these can be measured, monitored, and promoted. Within the long-term policy, one can then look forward to a system that not only strengthens the individual department in terms of quality but also makes mutual strengthening between departments of hospital-based physiotherapy possible.

Samenvatting

Kwaliteitssystemen dragen bij aan de verdere ontwikkeling van een beroep in de gezondheidszorg. Helaas ontbreekt het de ziekenhuisfysiotherapie momenteel aan een adequaat kwaliteitssysteem. Gezien de relevantie van ziekenhuisfysiotherapie voor optimale patiëntenzorg in ziekenhuizen, alsmede de omvang van deze sector is dit een ongewenste situatie. Afdelingen ziekenhuisfysiotherapie en de daar werkzame fysiotherapeuten ervaren hierdoor onvoldoende ondersteuning van hun mogelijkheden om de specifieke professionele kwaliteit te verbeteren. Dit tekort wordt gezien als een potentiële bedreiging voor de kwaliteit, positionering en profilering van de ziekenhuisfysiotherapie en geeft de noodzaak aan voor de ontwikkeling van een op maat gesneden kwaliteitssysteem.
In dit promotietraject onderzochten we de ontwikkeling van een toepasbaar kwaliteitssysteem voor afdelingen ziekenhuisfysiotherapie dat een aanvulling is op generieke ziekenhuis kwaliteitssystemen. Daarnaast werden de effecten van dit kwaliteitssysteem op de professionele ontwikkeling van de competenties van ziekenhuisfysiotherapeuten en de kwaliteitsverbetering van de ziekenhuisfysiotherapie onderzocht.
In het streven naar kwaliteitsverbetering van de ziekenhuisfysiotherapeut is in het eerste deel van deze thesis een kwaliteit-verbeterprogramma, zoals gebruikt onder eerstelijns fysiotherapeuten, aangepast voor ziekenhuisfysiotherapeuten door gebruik te maken van de tracermethode, een vorm van peer observation and feedback (**hoofdstuk 2**). De impact en toepasbaarheid van dit programma op de professionele ontwikkeling van ziekenhuisfysiotherapeuten in hun patiëntcommunicatie werd met verschillende methoden onderzocht. Vijftig deelnemende fysiotherapeuten uit zestien ziekenhuizen werden geclusterd in groepen per ziekenhuis en gekoppeld aan een even grote groep in een nabijgelegen ziekenhuis. Binnen de groepen voerden vaste koppels van fysiotherapeuten een twee uur durende tracer uit door elkaars dagelijkse werkroutine direct te observeren. Deze procedure werd zes maanden later herhaald. Het programma bleek een significant en relevant verbeterend effect te hebben op de communicatievaardigheden van de deelnemers. Alle deelnemers benadrukten de toegevoegde waarde van de tracermethode en noemden effecten op zelfreflectie en bewustwording het meest. Het programma bleek ook goed toe te passen in de dagelijkse praktijk volgens de deelnemers en de organisatoren.
In **hoofdstuk 3** werd middels een scoping review onderzocht hoe, door wie en met welk effect de tracermethode wordt toegepast als formatief instrument voor professionele ontwikkeling tussen zorgprofessionals van gelijke status, en welke soorten wetenschappelijk bewijs er zijn voor dit gebruik van de tracermethode. Vier elektronische databases werden doorzocht op in aanmerking komende artikelen, die door twee onafhankelijke onderzoekers werden gescreend en beoordeeld op geschiktheid. Uit de in aanmerking komende studies werden gegevens geëxtraheerd om de bevindingen samen te vatten, te ordenen en een narratief verslag te maken. De elektronische zoekactie leverde 1.757 unieke studies op, waarvan er acht werden opgenomen als geschikt en relevant voor het doel van de studie: vijf kwalitatieve, twee mixed methods, en één kwantitatieve studie. Zeven studies vonden

plaats in ziekenhuizen en één in de huisartsenpraktijk, waarbij de tracermethode vooral werd gebruikt als een vorm van intercollegiale observatie en formatieve feedback. De meeste studies evalueerden de haalbaarheid van de tracermethode en het effect ervan op de professionele ontwikkeling. Op één na meldden alle studies positieve effecten: deelnemers beschreven de tracermethode in het algemeen als waardevol en de moeite waard om voort te zetten. Hoewel het bewijsmateriaal beperkt is en zich grotendeels beperkt tot de ziekenhuisomgeving, lijkt het gebruik van de tracermethode voor intercollegiale observatie en formatieve feedback tussen beroepsbeoefenaren van gelijke status in de gezondheidszorg veelbelovend.

In het streven naar het verhogen van de kwaliteit van de afdeling ziekenhuisfysiotherapie in het tweede deel van deze thesis, werden eerst de belangrijkste kwaliteitsindicatoren van een ziekenhuis fysiotherapeutische afdeling in de ogen van ziekenhuisfysiotherapeuten en hun managers geïdentificeerd (**hoofdstuk 4**). Op basis van de input van drie focusgroepen en een gestructureerd literatuuronderzoek werd een eerste set van 138 potentiële kwaliteitsindicatoren voor ziekenhuisfysiotherapie samengesteld. Na controle op doublures en overlap met internationale accreditatie-instrumenten voor ziekenhuizen zoals Joint Commission International (JCI) en Qmentum, vormde deze set het uitgangspunt van een RAND-modified Delphi-procedure. Hierin werden de 138 potentiële indicatoren teruggebracht tot een set van 56 kwaliteitsindicatoren voor ziekenhuisfysiotherapie. Tenslotte werden deze 56 indicatoren gecondenseerd tot 7 samengestelde indicatoren, die elk een kwaliteitsthema vertegenwoordigen, gebaseerd op definities van de EFQM (de European Foundation for Quality Management); Kwaliteit van ziekenhuisfysiotherapie kenmerkt zich door (1) een cultuur van continu leren, verbeteren en een open dialoog, (2) deskundigheidsbevordering van medewerkers die aansluit bij de zorgvraag, (3) een kwaliteitscyclus om te werken aan het realiseren van doelen op korte, middellange en lange termijn, met een beleidsplan dat past binnen de kaders van het organisatiebeleid, (4) het integraal onderdeel zijn van het totale patiënt- en ziekenhuisproces, (5) een patiëntgericht beleid, (6) het waarborgen dat de fysiotherapeutische handelingen die door medewerkers worden verricht van een zo hoog mogelijke kwaliteit zijn, (7) het verzamelen van feedback over de prestaties bij belanghebbenden en medewerkers en het nemen van maatregelen die op deze feedback zijn gebaseerd.

Hierna werden in **hoofdstuk 5** de opvattingen van de belangrijkste belanghebbenden van ziekenhuisfysiotherapie over de kwaliteit van ziekenhuisfysiotherapie onderzocht. Er werden in drie ziekenhuizen 62 semigestructureerde interviews gehouden met vertegenwoordigers van vijf belangrijke groepen belanghebbenden van ziekenhuisfysiotherapie: medisch specialisten, ziekenhuismanagers, raden van bestuur, multidisciplinaire collega's, en patiënten. Volgens de geïnterviewden wordt kwaliteit van ziekenhuisfysiotherapie gekenmerkt door: (1) een menselijke benadering, (2) context specifieke en actueel toepasbare kennis en expertise, (3) het bieden van de juiste zorg op de juiste plaats op het juiste moment, (4) een proactief afdelingsbeleid waarbij de toegevoegde waarde voor

het ziekenhuis transparant is, (5) professionele ontwikkeling en innovatie vanuit een visie op wetenschap en ontwikkelingen in de zorg, (6) laagdrempeligheid en bewustwording van de eigen en andermans positie binnen de interdisciplinaire samenwerking, en (7) het waarborgen van een continuüm van zorg waarbij ook de pre- en postklinische zorg voor patiënten wordt betrokken. Belangrijkste kwaliteitsaspecten in het perspectief van alle betrokkenen waren (1) expertise die aansluit bij de specifieke pathologie van de patiënt, (2) het deel uitmaken van het zorgteam door de ziekenhuisfysiotherapeut, en (3) ondersteuning en begeleiding van alle patiënten met betrekking tot het bewegend functioneren tijdens de opnameperiode. Waar patiënten vooral de persoonlijke kwaliteiten van de fysiotherapeut benoemden, richtten de andere betrokkenen zich vooral op professionele en organisatorische factoren betreffende kwaliteit.

Na identificatie van kwaliteitsaspecten voor ziekenhuisfysiotherapie, vanuit het perspectief van ziekenhuisfysiotherapeuten en hun belangrijkste belanghebbenden, werden tenslotte de gevonden sets van kwaliteitsthema's gebruikt als basis voor het ontwerpen van een raamwerk om de kwaliteit van ziekenhuisfysiotherapie te verbeteren (**hoofdstuk 6**). Een multidisciplinair panel, bestaande uit in totaal zes vertegenwoordigers van de ziekenhuisfysiotherapie en haar belangrijkste belanghebbenden (patiënten, medisch specialisten, ziekenhuismanagement en beroepsvereniging) werd samengesteld. Met dit panel werden twee methoden van ontwerpgericht onderzoek toegepast: brainwriting en een beslissingsmatrix. De eerste ronde brainwriting leverde consensus op over zeven mogelijke methoden voor kwaliteitsverbetering van ziekenhuisfysiotherapie. Het plaatsen van deze methoden in een beslissingsmatrix tegen vier criteria (meetbaarheid, aanvaardbaarheid, impact, toegankelijkheid) leidde tot een lichte voorkeur voor een managementinformatiesysteem, terwijl vijf andere methoden direct daarna bijna evenveel voorkeur kregen. De minste voorkeur ging uit naar 360-graden feedback.

Eén geschikte methode om de kwaliteit van de ziekenhuisfysiotherapie te verbeteren kwam in dit onderzoek niet naar voren. Van de mogelijke methoden heeft een managementinformatiesysteem een lichte voorkeur. Deze methoden (bij- en nascholing, spiegelen aan PREMs en PROMs, een kwaliteitspaspoort met portfolio, intercollegiale observatie en feedback, een managementinformatiesysteem en intervisie met intercollegiale toetsing) verschillen in hun perspectief op kwaliteit, en in voor- en nadelen qua gebruik. Dit suggereert dat, binnen een kader om de kwaliteit van de ziekenhuisfysiotherapie te verbeteren, een combinatie van deze methoden wenselijk kan zijn om de respectievelijke kwaliteitsperspectieven en voor- en nadelen in gebruik te nivelleren.

De individuele beroepsbeoefenaar in de praktijk beschouwend, tonen de onderzoeksresultaten aan dat een op maat gemaakt kwaliteitsverbeteringsprogramma voor ziekenhuisfysiotherapeuten, gebaseerd op de tracermethode, de ontwikkeling van hun beroepsbekwaamheid stimuleert. De belangrijkste component van de haalbaarheid en relevantie van dit programma is dat het gemakkelijk toepasbaar is in ziekenhuizen omdat het vergelijkbaar is met de tracermethode die in de meeste ziekenhuizen al bekend

is. Succesvol toepassen van de tracermethode hangt ervan af of de waargenomen bevorderende en belemmerende factoren voor het gebruik hiervan voldoende in overweging worden genomen bij de implementatie in de praktijk.
Nu de kwaliteitsaspecten van ziekenhuisfysiotherapie zijn onderzocht en bekend zijn, evenals een raamwerk om deze te bevorderen, is het een logische volgende stap voor beleidsmakers binnen de fysiotherapie om een duidelijk beleid uit te zetten waarin de gewenste kwaliteitsindicatoren hierbinnen worden benoemd, alsmede de wijze waarop, met welke instrumenten en in welke verhouding deze gemeten, gemonitord en bevorderd kunnen worden. Binnen het lange termijn beleid kan dan worden uitgekeken naar een kwaliteitssysteem dat niet alleen de individuele afdeling versterkt in termen van kwaliteit, maar dat ook onderlinge versterking tussen afdelingen ziekenhuisfysiotherapie mogelijk maakt.

Research Data Management

All the data obtained during this PhD study have been stored at the secured disk of IQ Healthcare (IQHdata) in the directory provided for that purpose "PL Philip van der Wees/ Project Kwal ZKHfysiotherapie". The folders in that directory are numbered according to the same structure as this thesis. In each folder, the research plan is stored in the root directory. In the folder structure below, the following items can be found: documents for the medical ethics committee if appropriate, databases, data analysis scripts, anonymised and non-traceable data of participants, and manuscripts. Only members of the supervision team have also access to these data. Access can be requested via the head supervisor or the PhD-candidate. All personal data of study participants have been stored on secured servers of Saxion University of Applied Sciences to prevent the traceability of data. Only the PhD-candidate has access to these files. All databases are provided with the original scientific publications or are available from the first author at reasonable request.

All studies were performed in accordance with the Good Clinical Practice principles and the Netherlands Code of Conduct for Research Integrity. The criteria for authorship according to the International Committee of Medical Journal Editors (ICMJE) were followed. According to Dutch regulations, the study in **chapter 2** was considered exempt from review by the Medical Ethics Review Committee of Isala Hospital, Zwolle, the Netherlands and registered under number WMO 181127. The Research Ethics Committee of the Radboud university medical centre, declared that the study in **chapter 5** (#2020-6288) did not fall within the remit of the Medical Research Involving Human Subjects Act (WMO). No ethical consideration was requested for the scoping review in **chapter 3**, the Delphi-panel in **chapter 4**, and the design-based research in **chapter 6**. Despite the fact that Dutch legislation did not require this, it was decided to ask participants for informed consent during these studies.

All chapters are or will be published open-access. The data will be stored for 15 years after termination of the particular study. Anonymous use of data or use for educational purposes are possible, if renewed informed consent is considered unreasonable.

Dankwoord

"Wat! Nu nog?". Deze woorden van een jonge docente fysiotherapie, gesproken bovenaan de roltrap in de hal van Saxion Enschede op het moment dat zij vernam dat ik midden in een promotietraject verwikkeld was, galmen nog na in mijn herinnering.
Deze leeftijdskloof, wellicht beter betiteld als generatiekloof, werd ook zichtbaar tijdens de verplichte PhD introductiecursus van het Radboudumc. Een groep die voor 90% bestond uit jonge voornamelijk medische hemelbestormers, blind van ambitie om een doctorstitel te halen, waarbij vaak het onderwerp meer een ondergeschikt middel dan doel leek. De andere 10%, gematigde "ouderen" waaronder ik mijzelf dan maar reken, had elkaar al snel gevonden. 's Avonds tijdens de onvermijdelijke pub quiz moesten we dan ook een naam voor ons team bedenken. Al snel werd dit de frail elderly. Dit tot grote hilariteit van alle anderen. Wel werd het even benauwd voor ze toen we op een haar na de eerste plaats misten. Maar deze frail elderly hadden allen wel één grote overeenkomst. Zij wensten na jarenlange ervaring m.b.v. degelijk researchwerk de kroon op hun werk te gaan zetten. Een promotietraject als middel om hopelijk een strevenswaardig doel te gaan bereiken.

Na 30 jaar intramuraal werk als fysiotherapeut en leidinggevende fysiotherapie, en diverse kaderlidmaatschappen binnen het KNGF, was voor mij deze kroon helder: een impuls geven aan kwaliteit van ziekenhuisfysiotherapie, waar een degelijk kwaliteitssysteem node wordt gemist. Aan de start van mijn traject als buitenpromovendus van het Radboudumc in september 2018 leek dit een rechtlijnig klusje. Met mijn werkgever Isala kon ik afspraken maken zodat de vrijdag vrij werd gepland om aan mijn researchactiviteiten te kunnen werken. Maar goed, per mei 2019 stapte ik over naar Saxion. Dat gaf wat ruis. En nog weer een klein jaar later brak de Covidcrisis uit. Nog meer ruis. Maar dit alles gaf ook veel dynamiek en uitdaging. Naast het inwerken in onderwijs en toch die vrijdag (met uitloop in het weekeinde) vrij houden voor promotiewerk, ontstonden ook andere veelomvattender vraagstukken als: hoe houd je een fysieke opleiding als fysiotherapie op de been in een anderhalvemeterwereld? En hoe houd je research op de been in door Covid overbelaste ziekenhuizen? Problemen zijn er echter om aangepakt te worden. Maar wel in een rare tweedimensionale wereld. Alles geschiedde online, en waar je als buitenpromovendus al niet vaak collega promovendi tegenkomt, werd het bestaan nu wel erg eenzaam.

In deze boeiende dynamiek ben ik veel mensen veel dank verschuldigd die mij geholpen hebben deze kroon op het werk te realiseren, en een baken te zijn in geschetste dynamiek. In eerste instantie alle **binnen- en buitenlandse onderzoek participanten**. Ziekenhuisfysiotherapeuten, leidinggevenden ziekenhuisfysiotherapie, patiënten, medisch specialisten, ziekenhuisbestuurders, ziekenhuismanagers, paramedici, en buitenlandse inhoudelijke experts. Zonder hun bereidwillige deelname was dit geheel niet mogelijk geweest. Een driewerf dank!

Zonder **mijn promotieteam** was ik nergens geweest. Vier superprofessionals die mij adequaat, en als team bijzonder complementair aan elkaar, een steile leercurve hebben geleverd.

Prof. Dr. P.J. v.d. Wees, beste **Philip**, hoe ongelooflijk serieus en consciëntieus jij kunt zijn. Waardoor ik de momenten dat je even uit je rol schoot alleen maar extra kon waarderen. Je gaf structuur en vertrouwen, en greep op de juiste momenten in, ongeacht de drukte van jouw bestaan (bellend vanaf Schiphol, of gestrand op één of andere Amerikaanse luchthaven). Enorm knap. Ik had nooit kunnen bedenken toen ik je leerde kennen in jouw KNGF-tijd, dat jij ooit nog mijn promotor zou zijn.

Prof. Dr. P.L.P. Brand, beste **Paul**, wat verrassend (voor mij althans) dat je na een jaar toen ik Isala voor Saxion verruilde, promotor wilde blijven. Jouw interesse voor mijn onderwerp en de input van IQ Healthcare hieraan, gerelateerd aan jouw werkzaamheden waren hiervoor bepalend (en hopelijk ook dat ik na een jaar niet zo'n beroerde indruk achterliet). Ongelooflijk hoe snel en adequaat je op concepten van mijn hand reageerde, waarbij je niet alleen inhoudelijk een geweldige rol had, maar ook nog eens mijn Engelse taalgebruik een enorme boost gaf.

Dr. T.J. Hoogeboom, beste **Thomas**, op het gebied van humor begrepen we elkaar direct. Wellicht was dit wel de gemeenschappelijke basis waarop we elkaar in het gehele traject op andere gebieden ook goed begrepen. Jouw input van zowel wetenschappelijke, als filosofische aard heb ik enorm gewaardeerd. Zowel overstijgend als op detailniveau! Ik werd er alleen maar beter van. Oké, nog eentje dan op dit boeiend grensvlak: De wetenschap is wat we weten, filosofie is wat we niet weten (Bertrand Russell).

Dr. M.J.M. Maas, beste **Marjo**, op jouw eigen chaotische maar daardoor zeer creatieve wijze, heb je mij veel geleerd vanuit jouw promotieonderzoek naar feedback interventies in relatie tot kwaliteitsverbetering binnen de fysiotherapie, en vanuit jouw onderwijskundige achtergrond. Verrassend hoe je nog eens over de feedback van alle heren heen kon gaan vanuit compleet nieuwe invalshoeken. Het geheel werd er alleen maar beter en completer van. En wie had aan het begin van mijn traject kunnen denken dat wij ook nog "onderwijscollega's" zouden worden?

Linda, wie had ooit kunnen bevroeden, tijdens onze eerste kennismaking op een NVZF beleidsdag in de Deventer Fooddock, dat je zo'n essentieel onderdeel van het NVZF bestuur zou worden, en liefst tweemaal een constructief kritische tweede auteur bij mijn artikelen zou zijn. Ik wens jou als nieuwe KNGF-bestuurder veel succes toe, persoonlijk maar zeker ook voor de ziekenhuisfysiotherapie.
Het gehele verdere NVZF-bestuur met huidige- en ex-bestuursleden (**Miranda, Berry,**

Marleen, Inge) ben ik ook veel dank verschuldigd. Tijdens mijn eigen bestuursperiode voor de vruchtbare grond waarin mijn promotieonderzoek viel, maar ook daarna voor de nodige ondersteuning. Een speciaal woord van dank ben ik hier verschuldigd aan **Yvonne**, steun en toeverlaat van de NVZF vanuit het KNGF-kantoor. Dankzij jouw plichtsgetrouwheid en adequaat handelen was je vaak de organisatorische spin in het web, zeker tijdens het onderzoek waarin 16 ziekenhuizen en 50 ziekenhuisfysiotherapeuten participeerden. Jij bleef gelukkig wel het overzicht houden!

Guido, wat geweldig leuk dat je tweede auteur bij mijn vierde artikel bent. Zoals ik gewend van je ben, betrouwbaar en constructief. Wat hebben we in Isala, voordat ik naar Saxion overstapte, mooie avonturen beleefd op het gebied van onderzoek en innovatie. Hoogtepunten waren toch wel de jaarlijkse Isala wetenschapsavonden waarin we langzaam maar zeker (en zelfs prijswinnend!) lieten zien dat gedegen onderzoek ook vanuit de paramedische hoek kan komen. Ik hoop dat je die lijn kunt continueren!

En nog zo'n prettige tweede auteur: dank **Roel** voor onze soepele bijna natuurlijke samenwerking tijdens mijn allereerste artikel. Je leverde een geweldig waardevolle bijdrage. Ik wens je veel succes met jouw eigen promotietraject! Zet me maar vast op de adressenlijst voor jouw boekje!

Bij mijn overstap naar Saxion in mei 2019 was er alle begrip dat ik de vrijdag vrij wenste te houden. Deze "promotiedag" werd door **collega's, lectoraat en MT** van de Academie Gezondheidszorg (bijna altijd 😊) goed gerespecteerd. Voor dit begrip wil ik jullie allen danken, en **het MT** nog eens speciaal voor hun ondersteuning bij de totstandkoming van dit proefschrift.

Ik ben er reuze trots op dat ik twee geweldig leuke paranimfen heb: **Wieke en Bregtje**, dochter en reserve-dochter. **Bregtje**, als reserve-vader wens ik jou alle succes toe bij jouw rechtenstudie in Nijmegen, en misschien hop je nog wel eens een keer met ons mee op vakantie. Gezellig! Ik kan me daar nu al op verheugen. **Wieke**, heerlijke dochter, jouw studie ijver kent geen grenzen. Reeds socioloog, maar als heilig doel eerste graad leraar worden om tieners maatschappelijk gezien wat bij te brengen. Jouw bijdrage aan een betere wereld, waar ik ontzettend trots op ben. Maar vergeet niet om ook eens het hoofd uit te zetten, tijd te nemen voor jezelf en zo meer zelfvertrouwen te kweken! Ik hoop dat jullie beiden nog heel lang goede vriendinnen mogen blijven!

En tot slot een bericht aan het **thuisfront**: ik ben verheugd dat ik, zonder de afgelopen 4 jaren hiervoor enige proeve van bekwaamheid te hebben afgelegd, weer unaniem tot chef stofzuiger ben benoemd: home is where the heart is.

List of publications

International scientific publications

Steenbruggen, R.A., Dolleman G., van Heusden-Scholtalbers L.A., Hoogeboom, T. J., Maas, M., Brand, P., & Wees, P. V. D. (2022). Quality aspects of hospital-based physiotherapy from the perspective of key stakeholders: a qualitative study. BMJ Open Quality 2022;**11:**e001843. https://doi.org/10.1136/bmjoq-2022-001843

Steenbruggen, R. A., Maas, M. J. M., Hoogeboom, T. J., Brand, P. L. P., & Van der Wees, P. J. (2021). The application of the tracer method with peer observation and formative feedback for professional development in clinical practice: a scoping review. Perspectives on Medical Education, 11(1), 15–21. https://doi.org/10.1007/s40037-021-00693-6

Steenbruggen, R. A., Van Heusden-Scholtalbers, L. A., Hoogeboom, T. J., Maas, M., Brand, P., & Wees, P. V. D. (2021). Impact and feasibility of a tailor-made patient communication quality improvement programme for hospital-based physiotherapists: a mixed-methods study. BMJ Open Quality, 10(2), e001286. https://doi.org/10.1136/bmjoq-2020-001286

Steenbruggen, R. A., Van Oorsouw, R., Maas, M., Hoogeboom, T. J., Brand, P., & Wees, P. V. D. (2020). Development of quality indicators for departments of hospital-based physiotherapy: a modified Delphi study. BMJ Open Quality, 9(2), e000812. https://doi.org/10.1136/bmjoq-2019-000812

Steenbruggen, R., & Boven, H. (2019). Inside Outsourcing: Experiences of Outsourced Physical Therapy Services in Dutch Hospitals. Internet Journal of Allied Health Sciences and Practice. https://doi.org/10.46743/1540-580x/2019.1741

Other publications

Steenbruggen, R.A. (2021). World physiotherapy congress 2021: Seminar hospital-based physiotherapy, een terugblik. Fysiopraxis, 2021(7), 32.

Steenbruggen, R. A. (2018). Kwaliteitsregister Ziekenhuisfysiotherapie: Ontwikkeling intervisiemodules ligt op schema. Fysiopraxis, 2018(9), 36.

Steenbruggen, R., & Boven, H. (2019a). Inside outsourcing. Physiotherapy, 105, e70–e71. https://doi.org/10.1016/j.physio.2018.11.036

Profiles
LinkedIn https://www.linkedin.com/in/rudi-steenbruggen-mba-b450b78/
ORCiD 0000-0001-9531-910X
Web of Science ResearcherID AAF-4682-2022

Institute for Health Sciences
Radboudumc

PhD portfolio of R.A. (Rudi) Steenbruggen

Department: **Radboudumc, IQ Healthcare**
Graduate School: **Radboud Institute for Health Sciences**
PhD period: **01-09-2018 to 01-01-2023**
Promotor(s): **Prof. dr. P.J. (Philip) van der Wees, Prof. dr. P.L.P. (Paul) Brand**
Copromotor(s): **Dr. T.J. (Thomas) Hoogeboom, Dr. M.J.M. (Marjo) Maas**

Training activities	Hours
Courses	
• Qualitative Research Methods and Analysis (2018)	84.00
• RIHS - Introduction course for PhD candidates (2019)	15.00
• RIHS PhD introduction course (2019)	21.00
• Systematic Reviews and meta-analysis of intervention studies (2019)	56.00
• BROK (2019)	42.00
• Radboudumc - Scientific integrity (2020)	20.00
• Scientific Integrity for PhD candidates (2020)	28.00
• How to write a Medical Scientific Paper (2020)	5.60
• How to prepare your Poster Presentation (2021)	11.20
• Academic Writing for Publishing (2021)	35.00
Seminars	
• Management Forum online, Physio Deutschland (oral presentation) (2021)	4.00
• FH Joanneum, Graz, Austria (oral presentation) (2021)	4.00

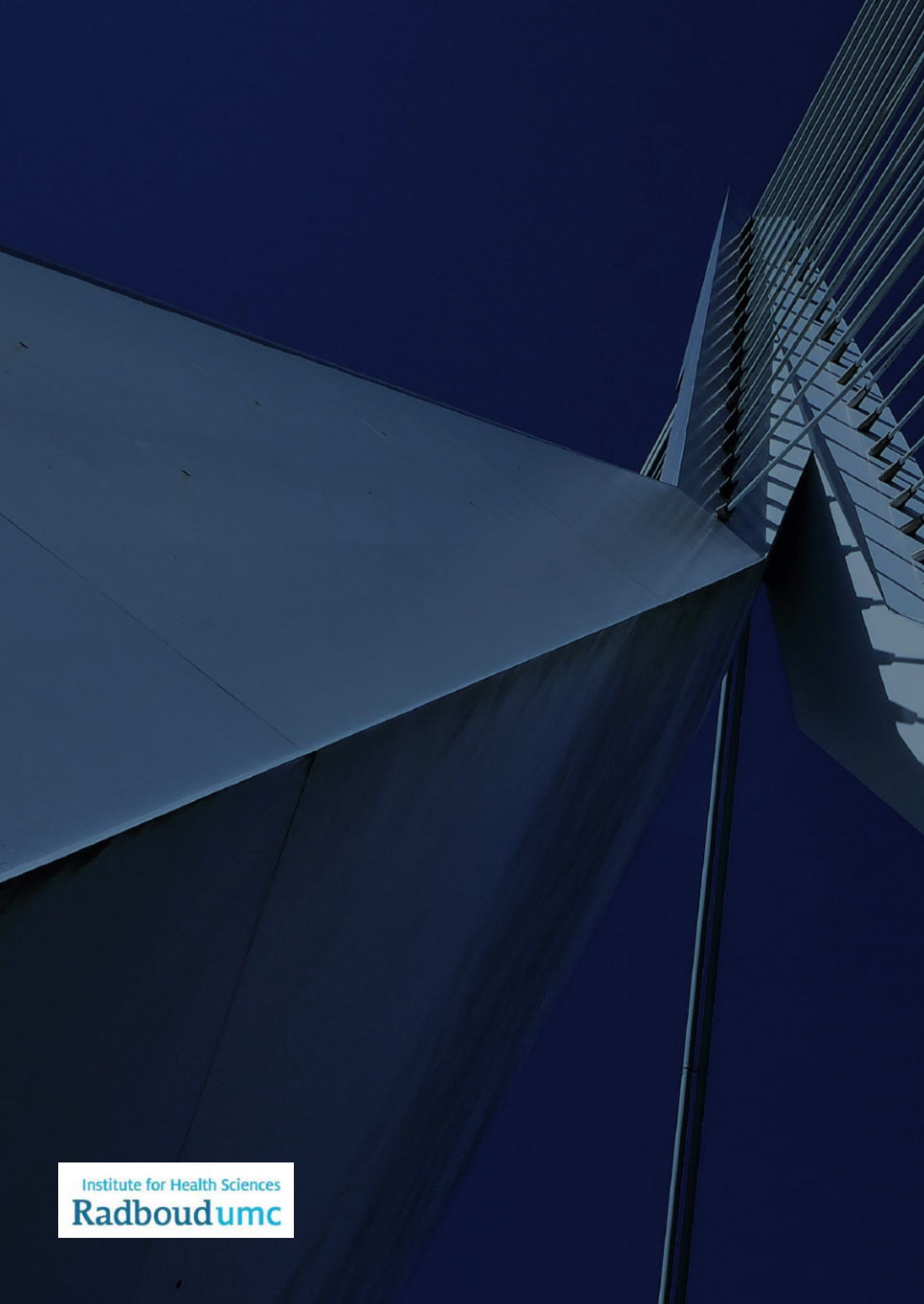
Conferences	
• Physiotherapy UK 2018, Birmingham, England (poster presentation) (2018)	28.00
• INPTRA 2019, Geneva, Switzerland (oral presentation) (2019)	28.00
• WCPT 2019, Geneva, Switzerland (visit) (2019)	28.00
• Wetenschapsdag WCF, Hilversum, the Netherlands (visit) (2019)	8.00
• CSM 2020, APTA, Denver (CO), USA (oral presentation) (2020)	35.00
• ER-WCPT 2020 online (oral presentation) (2020)	28.00
• ENPHE Congress online (oral presentation) (2021)	12.00
• World Physiotherapy Congress 2021 online (oral presentation) (2021)	35.00
• Wetenschapsdag WCF, Deventer, the Netherlands (visit) (2021)	8.00
• Management Forum, Physio Deutschland, Leipzig, Germany (oral presentation) (2022)	12.00
• BMJ Quality & Safety, Gothenburg, Sweden (poster presentation) (2022)	36.00
• FSV Fysiek Congres, Groningen, Netherlands (poster presentation) (2022)	16.00
• Dag van de Fysiotherapeut, 's-Hertogenbosch, Netherlands (poster presentation) (2022)	12.00
Other	
• Organisation of Focused Seminar on hospital-based physiotherapy (WPC 2021)	90.00
• Organisation of annual conference NVZF (2021)	30.00
• Board member of national directional group on hospital-based physiotherapy (2019-2021)	60.00
Teaching activities	
Lecturing	
• Workshops Analysis qualitative research with Atlas.ti (Saxion, Enschede) (2019-2022)	36.00
• Workshops patient record-keeping (Saxion, Enschede) (2019-2022)	36.00
Supervision of internships / other	
• Supervision Avans+ students Master thesis Physiotherapy (2018-2019)	60.00
• Supervision Saxion students Bachelor thesis Physiotherapy (2019-2022)	240.00
Total	**1163.80**

About the author

Rudi Steenbruggen was born on 29 June 1965 in Deventer, the Netherlands. He grew up in the Deventer "Vogelaar-neighbourhood" Rivierenwijk and completed his secondary education at the Alexander Hegius Scholengemeenschap (now: Etty Hillesum Lyceum) in Deventer in 1983. After this, he studied physiotherapy at the Deventer Academy for Physiotherapy, which later became the Rijkshogeschool IJsselland and is now known as Saxion University of Applied Sciences (BSc. 1987).

His professional career as a physiotherapist started in 1987 at the Randerode nursing and rehabilitation centre in Apeldoorn (currently: Zorggroep Apeldoorn). During this work in geriatrics, he became increasingly interested and educated in management and quality assurance. His physiotherapeutic activities were gradually surrendered for this and in 2004 he left Randerode as head of allied health care to work full-time in management as head of physiotherapy at the Isala Klinieken in Zwolle. Here, he completed his MBA studies and was subsequently promoted to manager of the allied health care, also at the Meppel location. In addition, from 2012 to 2017, he was a freelance lecturer and examiner within the master's programmes in physiotherapy at Avans+ Breda. In 2019, he made the switch to education by joining Saxion University of Applied Sciences as course director of the main phase of the Dutch Physiotherapy programme.

Based on the vision that a strong professional group can be very meaningful on a social, substantive and economic level, he performed, in addition to his main work, continuous managerial work for the Royal Dutch Society for Physiotherapy (KNGF) from 1996 to 2022. Consecutively, administrative positions were held in the Regional Association of Physiotherapy Stedendriehoek, the Committee for Employment, the Committee for Market Organisation and Management, and the Dutch Association for Hospital-based Physiotherapy (NVZF). Parallel to this, he participated in the Research Guidance Committee, the Guidance Committee Professional Profile (2005), and in various visitations to bachelor's and master's degree programmes of Physiotherapy. He was also chairman of the first Consilium Fysiotherapie.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