

Monitoring physiotherapy using a national registration network

Summary

The focus of this thesis is on transparency of physiotherapy care. As described in **Chapter 1**, the need for transparency and accountability in physiotherapy, as in other professions, has been growing in recent decades. This need has been fuelled by changes in the health care system. Under the current system, health care providers themselves are responsible for insight into their quality management; patients have greater responsibility, influence and choice; and health care insurers negotiate with health care providers on the price, content and organisation of care. Transparency of care enables the government - which remains responsible at system level for the accessibility, affordability and quality of care - to keep an overview of the provided health care, obtain insight into the quality of care and monitor the effects of policy measures. In a system with more transparency, providers can more easily compare their own care supply to that of others; and health care insurers gain insight into the health care they are insuring. Patients need transparency of care to be able to choose the best available care provider.

Information from patient administration can contribute to transparency of health care. Current developments in computerisation leading to increased use of electronic medical records (EMRs) provide new opportunities for health care research and transparency of care. EMRs are easily accessible, and by aggregating and merging EMR elements from several practices, clinical databases can be formed in a relatively easy manner. In 2001, in the Netherlands one such clinical database was established: the National Information Service for Allied Health Care (LiPZ). LiPZ is aimed at a continuous supply of health care related information on physiotherapy. For the purpose of this thesis, LiPZ data were used to contribute to transparency of quality, transparency of changes over time, transparency of outcome, and transparency

of physiotherapy care from an international perspective. The research questions addressed in this thesis concerning these issues are:

Transparency of quality:

- To what extent do physiotherapists adhere to the recommendations in the Dutch clinical guideline regarding the treatment of patients with non-specific low back pain?
- Which characteristics of patients, therapists and practices are associated with variation in the utilisation of physiotherapy by patients with non-specific low back pain?

Transparency of changes over time:

- Are developments in knowledge and health policy since the 1990s associated with changes in the Dutch physiotherapy management of patients with non-specific low back pain?

Transparency of outcome:

- What is the agreement between patients with neck, back or shoulder pain and physiotherapists and exercise therapists about the outcome of care and which therapist-based outcome measure agrees most with patient-based outcome measures?

Transparency from an international perspective:

- Which physiotherapy clinical databases exist worldwide and what are the basic aspects, data set, outputs, management and data quality of these databases?
- What are the patient demographic characteristics, treatment procedures conducted and relationships between demographic characteristics and the number of physiotherapy treatment visits in the United States, Israel and the Netherlands?

Chapter 2 describes the background considerations, methods, data collection, participants, quality control and achievements of the National Information Service for Allied Health Care (LiPZ). LiPZ is a sentinel network of about 40 physiotherapy practices, some 40 practices for Cesar or Mensendieck exercise therapy and approximately 20 dietetics practices. The goal of LiPZ is to provide a continuous supply of health care related information on these professions. With regard to physiotherapy, the representativeness of LiPZ is sufficient for patients treated by general physiotherapists. Therapists that are working over 50% of their time as a specialised therapist, such as a manual therapist, are excluded. The data collection is based on computerised registration of health care related information and is kept as compact as

possible. Variables that are collected are data needed for reimbursement, and some additional data that are fitted into routine patient administration. This resulted in a completely electronically based registration network with information on the patient, referral, complaint, treatment process and evaluation. Data are filtered out of the practice administration software and sent to NIVEL monthly. Following quality control, data are entered in the database, which nowadays includes data on over 80,000 patients. Participating therapists are offered some financial remuneration, benchmark data on an annual basis and accreditation points which can be used for registration in the professional register.

In **Chapter 3**, we investigated to what extent physiotherapists adhere to recommendations in the clinical physiotherapy guideline for the treatment of patients with non-specific low back pain.

Within the LiPZ-network, guideline-adherence was assessed on the basis of three criteria derived from the guideline. These criteria concerned the number of treatment visits, the treatment goals, and the applied interventions. The first criterion was only applicable in patients with acute complaints.

The results showed that the criterion concerning the number of treatment visits was met for 17% of the patients with acute complaints. The criterion relating to the treatment goals was met for 58% of all patients and the criterion for the interventions was met for 88% of all patients. For a small majority of the patients both the criterion concerning treatment goals and the criterion concerning interventions were met, whereas for almost all patients at least one of these two criteria was met. For 4% of the patients with acute complaints all three criteria were met. Substantial variation in guideline adherence among therapists was found for all criteria.

It was concluded that the quality of Dutch physiotherapy care showed distinct room for improvement.

Chapter 4 was aimed at providing insight into the variance in the number of treatment visits in patients with non-specific low back pain (LBP). Data from the LiPZ-network were used to investigate how the variance was distributed over patients, therapists and practices, and which factors explained the variance.

Multilevel linear regression analysis revealed that 88.4% of the variance was located among patients, 4.4% was located among therapists and 7.2% was

located among practices. Characteristics with regard to the complaint, i.e. acuity of the complaint and the profession of the referring physician, had the most powerful influence on the number of treatment visits. Furthermore, demographic characteristics were associated with the number of treatment visits. Besides these characteristics at patient level, a number of characteristics at therapist level also appeared to be related to the number of treatment visits. The final model explained 13% of the variance.

In conclusion, the results suggested that the variance in the number of physiotherapy treatment visits mainly depended on characteristics at patient level. However, the greater part of the clinical variation was not explained. Additional research is necessary to attain more insight into the reasons for clinical practice variation, and to achieve an increase in the transparency of care.

Since the 1990s there have been several developments as well as new regulations within Dutch physiotherapy practice. In **Chapter 5**, it was hypothesised that the proportion of patients with acute non-specific low back pain (LBP) referred to physiotherapy declined between 1989 and 2002 because of the negative recommendation about referral of patients with acute LBP by the Dutch College of General Practitioners. Furthermore, it was hypothesised that the number of treatment visits for patients with LBP has decreased because of changes in reimbursement policy. It was expected that there would be a smaller drop in patients with private health insurance compared to patients with public health insurance, as the reimbursement policy was aimed at patients with public health insurance. Finally, it was hypothesised that the use of physiotherapy modalities and massage therapy had declined since 1989, while the use of instructions and exercise therapy had risen because of the introduction of the guideline for the treatment of patients with LBP by physiotherapists and the advice against physiotherapy modalities by the Health Council of the Netherlands.

Besides data from the LiPZ-network, data from the BEEF-project (“Beleidsgericht Evaluatie en Effectonderzoek Extramurale Fysiotherapie” = Policy-oriented evaluation and effect-study on extramural physiotherapy) were used for testing these hypotheses. The BEEF-project was a registration project conducted among 32 physiotherapy practices in the Netherlands from 1989 to 1992.

Contrary to expectations, the proportion of patients with acute LBP visiting their physiotherapist had not decreased in 2002 compared to 1989. The

number of treatment visits declined by 1.1 visits. Analyses conducted separately for patients with public health insurance and for patients with private health insurance showed that the number of treatment visits had declined only in patients with public health insurance. Furthermore, as expected, the use of physiotherapy modalities registered a drop, while the use of exercise therapy showed a rise between 1989 and 2002.

On the basis of this study, it was concluded that physiotherapy management of patients with LBP seems to have changed as a result of quality management by the professional organisation and volume policy by the government.

In **Chapter 6**, we investigated to what extent physiotherapists' and exercise therapists' views of outcome of care correspond with patients' views. Furthermore, we examined which therapist-based outcome measure corresponds best with patient-based measures.

For this investigation, a study was conducted within the LiPZ-network. Thirty-nine physiotherapists and exercise therapists and 173 patients completed written questionnaires after the first treatment visits and six or ten weeks later. Concordance between therapist-based outcomes and patient-based outcomes was determined by Receiver Operating Characteristics (ROC) curves, using anchors based on patient-based disease-specific and generic questionnaires as gold standards. Furthermore, sensitivity and specificity were computed for the superior therapist-based measure.

The values of the area under the ROC-curves (AUC) ranged from 0.68 to 0.82. The therapist-based transition question 'to what extent have the patients' complaints changed compared to intake?' had the best AUC-values. The optimum cut-off score for categorising patients into those who improved and those who did not, was between the categories 'improved' and 'strongly improved'. This means that the therapists' scores of 'strongly improved' correlated best with improvement on the patient-based anchors, while the therapists' scores of 'improved' or less correlated best with non-improvement on the patient-based anchors. Corresponding sensitivity and specificity scores were 0.74 and 0.84, respectively.

It was concluded that the AUC-values for the concordance regarding outcome varied from fair to good. However, the optimum cut-off to separate into patients who improved and patients who did not was high, reducing the feasibility in clinical practice. It was recommended to use therapist-based outcome measures in combination with patient-based outcome measures.

As information technology is becoming an increasingly important tool for assessing clinical process and outcomes in physiotherapy, **Chapter 7** contains a worldwide identification of physiotherapy clinical databases. Furthermore, the basic aspects, data set, outputs, management and data quality of these databases were described. The search was restricted to databases in North America, Australia, Israel, and Western Europe.

Identification of the databases was performed by contacting members of the World Confederation for Physical Therapy (WCPT), as well as searching Pubmed, searching the Internet, and snowball sampling. A structured questionnaire was used to study the characteristics of the databases.

Seven clinical databases were identified, three of which were located in the Netherlands. The databases generally contained data on patients, including diagnoses, referral sources, and treatments. The purposes of the databases were diverse, but they can be summarised as quality improvement, research, and performance management.

It was concluded that, although clinical databases were new to the field, they offered great potential for physiotherapy research.

In **Chapter 8**, data from three of the databases identified in Chapter 7, were used to compare patient demographic characteristics and treatment process characteristics in outpatient physiotherapy practice in the United States, Israel and the Netherlands.

Data were used from Focus On Therapeutic Outcomes, Inc (USA), Maccabi Healthcare Services (Israel) and LiPZ (the Netherlands). Descriptive statistics were calculated for the patient demographic characteristics and treatment process characteristics. Differences in data were tested using chi-square tests, ANOVA and linear regression techniques.

Results were similar for age, gender and the body part treated. Differences existed in symptom acuity of the health problem, with more patients having chronic complaints in the United States and Israel, compared to the Netherlands. Furthermore, physical agents and mechanical modalities were applied more often in the United States and Israel compared to the Netherlands. The mean number of visits per treatment episode was lower in Israel compared to the United States and the Netherlands.

Although it was concluded that clinical databases can be used for describing patient demographic characteristics, the terminology used to describe treatment processes and classify patients varied among the

databases. Therefore, more standardisation of terminology is required to enable more detailed comparisons.

Chapter 9 discusses the main results of the studies which contributed to the transparency of process and outcome, transparency of quality, transparency of changes over time and transparency from an international perspective.

All the studies conducted seem to have contributed to the transparency of process. Concerning the transparency of outcome, it was advocated that attention needs to be paid to improving the use of patient-based outcome measures. Several tools are suggested in this chapter.

Research into guideline adherence and medical practice variation addressed the transparency of quality. Although it was concluded that guideline adherence was far from optimal, it was also asserted that more research examining the relationship between guideline adherence and outcome and costs of care is needed for interpreting the relevance of the findings. Only 13% of medical practice variation in patients with low back pain could be explained. Chapter 9 shows that policy makers and health care insurers would benefit from more insight into the reasons for medical practice variation.

By comparing two studies based on registration data conducted in two different time periods, the transparency of changes over time was addressed. Although several changes were found, it is questioned whether these were sufficient. It is advocated that additional research into the association between the changes found and changes in outcome of care is needed.

Comparing LiPZ data with data from clinical databases in the United States and Israel contributed to the transparency from an international perspective. Attention is paid to the difficulties of comparing data from different studies, as terminology differs among studies.

Furthermore, in chapter 9, the limitations of LiPZ are discussed. Among the limitations are the small size of the network, the exclusion of specialised physiotherapists, the restricted number of software packages that include LiPZ software, and the complex data management. Advantages of the network are manageable recruitment and support of therapists, relatively low costs and controllable data processing capacity.

Finally, recommendations for the future of the LiPZ network are made. It is advocated that continuous adjustment in the network is crucial, as is inclusion of patient-based outcome measures. New developments in ICT may

open new opportunities for improving registration networks. However, it is recommended that the network should be kept as compact as possible.