

# **Quality improvement in primary care physical therapy: the implementation of outcome measures; a process evaluation**

**Master Thesis**

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## Dankwoord

*“Focus on the journey, not the destination. Joy is found not in finishing an activity but in doing it.”*

(Greg Anderson, Author)

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## **Samenvatting**

**Achtergrond:** Het gebruiken, analyseren en evalueren van meetinstrumenten maakt het mogelijk om de kwaliteit van zorg te objectiveren en zorgverleners professioneel te ontwikkelen. De bevorderende en belemmerende factoren voor het normale gebruik van meetinstrumenten in de dagelijkse praktijk zijn onderzocht, maar er is geen onderzoek uitgevoerd naar een daadwerkelijke implementatie en evaluatie van een set meetinstrumenten binnen fysiotherapie.

**Doelstelling:** Het bepalen van de haalbaarheid van, en de ervaringen met, de implementatie van een set meetinstrumenten in de 1<sup>e</sup>-lijns fysiotherapie.

**Design:** Een longitudinale “mixed-method” procesevaluatie.

**Methode:** De fysiotherapeuten van Stichting Gezondheidscentra Eindhoven ontwikkelden een kwaliteitsverbeterprogramma (QIP). Om de haalbaarheid en de ervaringen met het gebruik van meetinstrumenten te onderzoeken, is een procesevaluatie uitgevoerd. Data zijn verzameld via het geregistreerde gebruik van meetinstrumenten, een zelfanalyse lijst en focusgroepen. We beschrijven kwantitatieve data descriptief en gebruikten een interpretatieve fenomenologische benadering voor de kwalitatieve data.

**Resultaten:** Meetinstrumenten werden matig en steeds minder gebruikt tijdens het QIP. De fysiotherapeuten erkenden dat het gebruik veel mogelijke voordelen heeft (objectiviteit, transparantie van zorg, en uniformiteit in de behandeling van patiënten) en identificeerden meerdere bevorderende factoren (“key-person”, feedback gebruik meetinstrumenten, de instructies en een set meetinstrumenten) en belemmerende factoren (kennis, ervaring, tijd, routine en registratie), die het gebruik van meetinstrumenten beïnvloeden.

**Conclusie:** Het QIP leidt niet tot een hoog of langdurig gebruik van meetinstrumenten. De fysiotherapeuten erkennen de voordelen van meetinstrumenten en de elementen van de QIP waren prikkels om te veranderen. Echter, de gerapporteerde belemmerende factoren wegen niet voldoende op tegen de mogelijke voordelen en bevorderende factoren.

## **Abstract**

**Background:** Through the recording, analysis and evaluation of outcome measures (OMs) it is possible to objectify quality of care and achieve professional development of health care providers. The barriers and facilitators of current use of OMs in everyday care have been studied before; no prior research has actually implemented a set of OMs and evaluated this implementation in physical therapy.

**Objectives:** To determine the feasibility of and the experiences with the implementation of a set of OMs in primary care physical therapy.

**Design:** A longitudinal mixed-method process evaluation.

**Methods:** The physical therapists (PTs) of the Eindhoven Corporation of Primary Health Care Centers developed a quality improvement program (QIP). To investigate feasibility and experiences, a process evaluation was performed. Data were collected through the registered use of OMs, a self-analysis list, and focus groups. Quantitative data were assessed descriptively and an interpretative phenomenological approach was used for the qualitative data.

**Results:** A high or prolonged use of OMs was not observed during the QIP. The PTs recognized that OMs have numerous possible benefits (objectivity, transparency of care, and uniformity of patient management) and identified several facilitators (key person, feedback on use, instructing and a set of OMs) and barriers (knowledge, experience, time, routine and registration) that modified the use of OMs.

**Conclusions:** The QIP generated no high or prolonged use of OMs. The PTs recognize the benefits of OMs and the elements of the QIP were incentives to change. However, the reported barriers outweighed the possible benefits and facilitators.

**Word Count:** 3370

**Key Words:** Process evaluation; Feasibility; Outcome measures; Primary care; Physical therapy

## **Introduction**

Through the recording, analysis and evaluation of outcome measures in everyday care, it is possible to objectify quality of care (1). The use of outcome measures (OMs) could also contribute to the professional development of health care providers by means of critically evaluating and improving their own actions (2). Therefore, monitoring of health status through OMs could be considered an aspect of good clinical practice in physical therapy (2-4). Therefore, physical therapists (PTs) are stimulated increasingly to use OMs (1,5,6). Despite this pressure and despite the possible advantages, the use of OMs in everyday physical therapy is remarkably low (3,5,7-10).

The Royal Dutch Society for Physical Therapy made the use of OMs a focal point of its policy (11,12) by composing a comprehensive set of OMs based on the International Classification of Functioning, Disability and Health (ICF) (Appendix A) (11-13), accompanied by four day courses for PTs (11,12,14).

This implementation strategy is based on several qualitative studies which have assessed perceived barriers and facilitators concerning the use of OMs in daily practice. The barriers and facilitators described concern the OMs themselves (availability, selection), the physical therapist (knowledge, attitude and expertise), the organization (policies, digitization), the patient (tolerance, understanding treatment), and the social context (health insurance companies, colleagues and general practitioners (GPs)) (5,6,11,14,15).

However, these studies investigated the current use of OMs in usual care through either surveys or focus groups (5,6,11,14,15). No prior research has actually implemented a set of OMs and no studies exist that evaluated the process of and experiences with an implementation program aimed at introducing OMs. We expect such a program to facilitate and enhance the use of OMs. Therefore, this study investigates the feasibility of, and the experiences with, the implementation of a comprehensive set of outcome measures in a specific target group and setting.

## **2. Method**

### *2.1 Design*

A longitudinal mixed-method process evaluation of a bottom-up Quality Improvement Program (QIP)

### *2.2 Setting & Participants*

The study was performed in the Eindhoven Corporation of Primary Health Care Centers (SGE) (16) in the city of Eindhoven, the Netherlands. SGE offers multidisciplinary primary care to 62,000 patients; with health care professionals e.g. GPs, psychologists, practice nurses and physical therapists working together in ten health care centers.

We invited all 31 physical therapists employed by SGE to participate in the QIP and the process evaluation, to obtain as many heterogenic perspectives as possible.

### *2.3 Quality Improvement Program*

The PTs acknowledged the importance of using OMs routinely to improve quality of physical therapy care. A 4-month QIP was developed bottom-up by the PTs using implementation strategies based on the known barriers and facilitators (5,6,11,14,15) (Figure 1).

The QIP consisted of 4 elements:

1. Instructions to ensure that PTs could select and use one or multiple OMs for every new patient consulting them.
2. A set of OMs (Appendix A) made available full-text to all PTs and an electronic form to register use of OMs.
3. A reminder sent by e-mail after the first month of the 4-month program period.
4. 1-hour semi-structured focus groups with the PTs, one per health care center in order to evaluate the use of outcome measures, and discuss the facilitators and barriers.

## *2.4 Data collection*

A process evaluation can elucidate the mechanisms responsible for the results obtained in a QIP (17-21). To investigate the feasibility and the experiences, the QIP was evaluated longitudinally. Data were collected by the principal investigator (TK), who is also a PT in SGE. We used both quantitative and qualitative data as this provides the strongest evidence for process evaluation (18). Ethical approval was obtained from the Medical Ethical Committee of Maastricht University Medical Center.

### *2.4.1 Quantitative data collection*

To determine the actual use of OMs, the PTs registered which OMs they had used on a registration form. This data was also used to provide feedback to the PTs during the 1-hour focus groups (Figure 1).

To assess the experiences with and the attitudes towards using OMs, a self-analysis list (14) was administered twice during the QIP (baseline and end). The questionnaire consists of 24 items rated on a Likert scale (ranging from 1 “fully disagree” to 5 “fully agree”) and assesses the phases of behavioral change of the PTs, e.g. orientation, insight, acceptance, change and preservation of change. For example: “I am able to interpret the outcome of measurement instruments in the right way” (insight), and “I think that the use of measurement instruments does not take too much of my time” (acceptance). The baseline results of the self-analysis list were also used as feedback during the focus groups (Figure 1).

### *2.4.2 Qualitative data collection*

Besides giving the PTs feedback, the focus group discussions were used to investigate experiences, facilitators and barriers concerning the use of OMs. The focus groups were moderated by the principal investigator (TK) and audio and videotaped to capture verbal and nonverbal behavior.

<Insert Figure 1>

## *2.5 Data-analysis*

### *2.5.1 Quantitative-analysis*

The Statistical Package for the Social Sciences (SPSS) Version 17.0 for Windows (SPSS Inc., Chicago, Illinois) was used to analyze the quantitative data. All data were presented as mean (standard deviation (SD)) or median for continuous data or in numbers or percentages for numerical data.

To illustrate the phases of behavioral change a mean score was calculated for each phase of the self-analysis list.

### *2.5.2 Qualitative-analysis*

The qualitative data was analyzed with an interpretative phenomenological approach (22). All audiotapes were transcribed verbatim. Open, axial and selective coding schemes were used to identify major themes. To provide investigator triangulation, all transcripts were analyzed by two researchers (TK & LG) who first analyzed individually and then together, continuously comparing codes and themes, using the software program ATLAS.ti (ATLAS.ti GmbH, Berlin). As member check (23), the results of the focus groups were presented to their respective members.

### **3. Results**

#### *3.1 Quantitative results*

During the QIP, SGE employed 31 PTs of which 26 returned the first self-analysis list. Of the respondents, 39% were male and the mean age was 36.7 (SD 11.2) years. The PTs averaged 12.9 years of working experience and 46.2% received prior education concerning OMs through the Royal Dutch Society for Physical Therapy (Table 1).

A total of 2,495 new patients consulted the 31 PTs during the study period. An OM was used 462 times (18.5%). The number of OMs used and the percentage of new patients in which OMs were administered diminished during the QIP from 190(29.7%) in the first month, 121(19.1%) in the second month, 105(16.5%) in the third month to 46(7.9%) at the end. The Visual Analogue Scale (VAS) (94x) was the OM that was mostly used by the PTs, followed by the Neck Disability Index (NDI) (64x), the Global Perceived Effect (44x), the Shoulder Pain and Disability Index (SPADI) (42x), and the Quebec Back Pain Disability Scale (QBPDS) (39x) (data not shown in table).

The self-analysis list was returned by 17 PTs at the end of the QIP. Mean scores on the self-analysis list indicated a slightly more positive attitude towards using OMs. The largest increases were seen in the phases change and preservation of change (Table 2).

<Insert Table 1>

<Insert Table 2>

#### *3.2 Qualitative results*

Two major themes and several key quotes (Table 3) were identified from the focus groups. Using OMs has certain benefits and recognizing these benefits is essential in order to start and keep using them. Furthermore, several facilitators and barriers modify the use of OMs. Both themes can be described on three relevant levels including the patient-physical therapist level, the organizational

level and the societal level. The patient-physical therapist level was widely recognized as the most important.

### *3.2.1 Benefits*

#### *Patient-physical therapist level*

The majority of PTs had a general positive attitude towards OMs. The PTs noted that patients appreciate the use of OMs and value their results. For both the patient and the PT, OMs possessed objectivity resulting in transparency of care and insight in the current clinical situation, course of symptoms, and in the progress and effects of treatment. Both total scores and specific questions of OMs were used in patient consultations. For example, PTs could demonstrate that patients had improved physical function while the patient did not perceive this improvement because they focused on pain.

The PTs stated that OMs showed the effect of their treatment, creating the opportunity to evaluate and adjust their patient management. OMs provided anamnestic support and a way to tailor treatment in accordance with patient treatment goals. OMs could identify wishes and (true) reasons of help seeking behavior and were useful to expose psychosocial factors, influencing the somatic symptoms and clinical recovery.

Besides these benefits, a proper anamnesis was considered vital in a good patient-physical therapist contact and conversation was considered essential in understanding a patient's situation and symptoms. After these necessary elements, an OM sometimes did not add much relevance. Furthermore, when the patient said he felt cured, an OM was not considered of added value.

#### *Organizational level*

On an organizational level, PTs stated that OMs could be used to create uniformity in patient management through comparing colleagues, provided all employees are comfortable with such a comparison. Colleagues however, should not be judged on their results but supported constructively and the differences between patient populations of different PTs should be taken into account.

Identifying that some PTs achieve better or faster results, could lead to knowledge exchange and discussions about best treatment for certain symptoms in order to improve quality of care and cause intercollegial learning. Although OMs are means of quality insurance and enhance care efficiency, results should always be interpreted against the background of the specific patient, the specific PT and their relationship, never solely.

### *Societal level*

Externally, OMs could be tools to compare different health care organizations, showing quality and quality initiatives, possibly to attract new patients or even new PTs. OMs however should never be a goal but are means. Care and patient-physical therapist contact should not become too businesslike, impersonal or performance oriented; e.g. spending too much time in the consultation on the processing of the OM.

Moreover, the use of OMs could objectify professional communication with colleagues and other health care professionals. Insurance companies could be demonstrated that quality of care was considered important and that patients received effective and efficient treatment which might result in extra reimbursements and a good benchmark.

### *3.2.2 Facilitators and barriers*

#### *Patient-physical therapist level*

Some specific patient groups are not very suitable for OMs e.g. the elderly or persons with a different native language. Translation into relevant other languages for a specific setting was suggested. Sometimes, patients are not honest in their answers. They might euphemize or exaggerate symptoms and this can be influenced by different types of patient personality or the way the PT offers the questionnaire. More complex and extensive questionnaires yield better, more objective outcomes but diminish the practicality of the questionnaire. Complex questionnaires can also produce scores and sub scores that are difficult to calculate or interpret. Especially when a questionnaire is used longitudinally

with consecutive measurements, it is difficult to translate a difference in score in a clinical difference. Furthermore, patient and PT can differ in their interpretation of a certain score.

The PTs indicated that their ability to use OMs was not improved by the QIP. Almost all PTs, regardless of previous education on OMs, said they lacked knowledge and experience using OMs and the QIP did not provide them with adequate comprehension of the content or benefit of specific OMs. PTs had difficulty changing their daily routine and sometimes did not see the need to increase their knowledge. The PTs experienced the added value of OMs within patient management insufficiently. They had trouble deciding which OMs to use in which patients. Furthermore, the length of some OMs and the time needed to complete them, were reasons for PTs not to use OMs, especially when a specific patient only had limited health insurance coverage, although they acknowledged that letting patients fill out the OMs at home or in the waiting room could partly solve these practical issues. They mainly selected short and easy to administer OMs, e.g. the VAS. Some OMs did not produce relevant information.

#### *Organizational level*

The PTs stated that a key-person who was responsible for the QIP and the feedback on the results were incentives to change. Also, instructing and offering the PTs a small, selected set of OMs (Appendix A) facilitated the use, although some considered the set of OMs as too large. In an organization, there has to be regular attention for OMs in team meetings and periodic trainings. Change needs time and repetition, supported by the organization employing the PTs. Some PTs did not want to use OMs because they were afraid that their employer was going to penalize possibly suboptimal results.

The PTs thought using paper questionnaires was outdated. Questionnaires should be an integral part of the electronic PT system and care protocols, making use and registration of results and sharing results with co workers easier. Some PTs suggested that an employing organization should make the use of OMs obligatory in order to implement OMs effectively.

*Societal level*

The PTs noticed a trend that their work should be increasingly transparent in order to receive financing from health insurance companies. They viewed this as beneficial for improving quality, but there was some concern that health insurance companies would focus solely on results disregarding specific factors that could improve or worsen results of a specific PT, or even make contractual demands concerning treatment goals or targets.

<Insert Table 3>

## **4. Discussion**

### *4.1 Summary main results*

Although this study used a bottom-up QIP to pragmatically support PTs in using OMs, we did not observe any substantial or prolonged use of OMs. The PTs recognized that the use of OMs in daily physical therapy has numerous possible benefits (objectivity, transparency of care, and uniformity of patient management) and identified several facilitators (key person, feedback on use, instructing and a set of OMs). However, considerable barriers e.g. lack of knowledge of which OMs to use and how to use them, lack of experience with the actual benefits, lack of time to really incorporate OMs in a useful way, difficulty in changing daily routine and suboptimal means of registering still prohibited a large use of OMs.

### *4.2 Strengths and limitations*

The QIP was developed bottom-up by the PTs using evidence-based implementation strategies to target known facilitators and barriers for the use of OMs. This could hypothetically improve the adherence, because the QIP is supported by the PTs, and facilitate implementation within daily care because barriers, such as irrelevance to daily practice are eliminated. This assumption is supported by the reported incentives to change of the QIP (key-person and feedback through focus groups), and the reported facilitators for the use of OMs (instruction and availability of a small selected set OMs). However, it is questionable if a 4-month period is long enough to establish a behavioral change. A self-analysis list (14) assessed the attitudes towards OMs. The results gave an indication of behavioral change of the PTs and provided feedback. However, the list is not an evaluative instrument and cannot establish if a behavioral change occurred.

The principal investigator (TK) is also a PT at SGE and proposes the use of OMs. This could have influenced the focus groups due to a prejudiced moderation and the PTs giving socially acceptable answers to their colleague. Also, data-analysis could have been biased by personal opinions. The mixed-method design, member check and investigator triangulation were used to

compensate these effects. Conversely, the moderator being a colleague supported this study and could have actually contributed to freer discussions, creating more relevant information.

No opinions of other stakeholders, e.g. patients, were collected which resulted in a one-sided image of the benefits, facilitators and barriers of OMs. Future qualitative research could be necessary to obtain opinions of other stakeholders. Since this research was only performed in SGE physical therapy, the results could be influenced by specific circumstances lowering transferability to other settings and other countries. For example, these PTs are employed in a large primary care organization and organizational aspects could be more relevant for them compared to PTs who have a private practice without a firm connection to a central organization or other practices. Some results could be specific for this setting, but our results show widespread problems that are also recognized by prior international research.

#### *4.3 Comparison with the literature*

To our knowledge, this is the first mixed-method process evaluation to investigate the implementation of a set of OMs into primary care physical therapy. Consequently, it was possible to measure the actual use and to describe the experiences of the PTs in order to highlight the mechanisms responsible for the results obtained in the QIP (17).

Quantitatively, there has been no research on the actual proportion of patients in which OMs are used, although this is necessary to assess the feasibility and the amount of quality improvement in usual care. Previous studies, which used similar PT populations, only surveyed the number of different outcome measures or the percentages of patients with whom OMs were used, estimated by PTs (5,6,14,15) which may be socially-desirable estimations. These show that the OMs most used are the VAS, the Patient Specific Complaints, NDI and SPADI which is, as we found qualitatively, because of lack of time, knowledge, experience and routine.

Our study shows a decreasing use of OMs throughout the QIP. Abrams et al. (5) reported a significant increase (30 to 66%) in reported OM use by Australian PTs in a 6-month period. In this study, the use of OMs was obligatory, as part of clinical decision making. Educational materials and peer contacts were available to the PTs to assist the implementation. Our study did not oblige the use of OMs. An electronic PT system to support clinical decision making and to automatically remind the use of OMs in each patient was lacking. In line with the findings of Abrams et al. (5), the PTs in our study indicated that in order to start using OMs an employing organization could make the use of OMs obligatory. Also, OMs should be an integral part of the electronic PT system and care protocols. To assess the feasibility more extensively, future studies should therefore not only be directed towards PTs but also towards practice organizations through policies and registration.

This study found the same facilitators and barriers as several others (5,6,9-11,14,15). Also, the disparity between what PTs say e.g. positive attitude and convinced of the benefits of OMs, and what they do e.g. moderate use, has been documented (9,10,14). This study actually implemented a set of OMs while most previous studies on facilitators and barriers investigated only perceived behavior of PTs (5,6,9-11,14,15) and recommended implementation strategies e.g. education, development of a comprehensive set of OMs, and instruction on application, scoring, and interpretation (11,14). Our results show however, that despite the availability of a predefined set of OMs and clear instructions how to use the OMs, the PTs mainly selected short and easy to administer OMs, e.g. VAS, due to practical issues. Also, education was followed by almost 50% of the PTs prior to the QIP, a tool suggested by Swinkels et al. (14) and Stevens et al. (11) Our results show no influence of education on the use of OMs. Future research should evaluate the impact of education on the use of OMs and the best educational structure.

#### *4.4 Conclusion*

This process evaluation shows that the implementation of a set of OMs in primary care physical therapy through this bottom-up QIP was not powerful enough to really lead to a significant use of OMs. The PTs recognized the benefits of OMs and the elements of the QIP were incentives to change. However, the reported barriers concerning knowledge, experience, time, and routine outweighed the possible benefits and facilitators.

This study offers a better insight in the actual facilitators and barriers for the use of OMs and provides opportunities to achieve potential successful implementation in the future by focusing on knowledge, electronic PT system, registration, embedding OMs in care protocols, intercollegial learning and periodic training. Improving quality of care is a complex trajectory and it cannot be just switched on, it takes time and should be a continued process of mutual effort.

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**Conflict of interest statement**

None

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## Tables & Figures

**Table 1: Socio-demographic data**

<b>N Respondents (% of total PTs)</b>	26 (83.9%)
<b>Sex (male)</b>	38.5%
<b>Age (mean, SD), yr</b>	36.7 (11.2)
<b>Experience (mean, SD), yr</b>	12.9 (10.0)
<b>Working hours/wk (median)</b>	25-32
<b>Patients/wk (median)</b>	≥ 26
<b>Education on use outcome measures</b>	46.2%

N = number, PTs = SGE physical therapists, % = percentage, Yr = year, SD = standard deviation, Wk = week

**Table 2: Self-analysis list: Phases of behavioral change SGE (14)**

<b>Phases of behavioral change (Range 1-5)*</b>	<b>Items phase</b>	<b>Begin QIP (n = 26)</b>	<b>End QIP (n = 17)</b>
<b>Orientation (mean, SD)</b>	3	4.1 (0.64)	4.3 (0.46)
<b>Insight (mean, SD)</b>	6	3.8 (0.56)	3.9 (0.50)
<b>Acceptance (mean, SD)</b>	8	3.6 (0.50)	3.7 (0.47)
<b>Change (mean, SD)</b>	4	3.4 (0.64)	3.9 (0.40)
<b>Preservation of change (mean, SD)</b>	3	2.4 (0.64)	2.8 (0.55)

SGE = the Eindhoven Corporation of Primary Health Care centers, n = number of SGE physical therapists, QIP = Quality Improvement Program, SD = standard deviation

\* A higher score indicates a more positive attitude towards using outcome measures.

**Table 3: Key quotes**

Theme	Participant	Quote
<b>Benefits</b>		
<b>Patient-physical therapist level</b>	PT30	It can be a benchmark to see if I have chosen the right path, and it is also a means to show the client in an objective manner what we have achieved. Really, hard numbers, that is what people are interested in.
	PT6	I think you certainly need outcome measures to measure the effect of your treatment. And to objectify, and get insight into, what you do and whether it actually does anything. In that area I think outcome measures can be very useful.
	PT13	What I really liked, and didn't think about, is that you can make your work meaningful. What I do has added value. This outcome measure shows me that it (my treatment) has been good for the patient.
	PT12	It perhaps gives you the feeling that you might be on the right track. That you're not just doing something, but actually have chosen the right treatment.
	PT6	Both, I mean, obviously you want to understand what you're doing is right, and secondly you obviously have many patients who say it didn't had any effect, but in outcome measures can see it did had an effect. Thereby you can prove them their progression or if they stagnate.
	PT16	If you ask a patient how he's doing and if he's still in pain, you probably already asked half the questionnaire, perhaps the whole in summary. Why should you do it again, for yourself?
	PT10	It's more the time it takes to complete the questionnaire, it takes so much time. But the patient does not mind, he thinks it is good. I think patients consider it rather professional when you use outcome measures.
	PT30	When I do not use an outcome measure, I often find out that I have been incomplete in my anamnesis.
	PT23	Because I only use that for patients that are not convinced that they improved. When the patient feels it's going well, I have reached my treatment goal. I do not see the added value of giving him feedback.
	PT30	Yes, but I have to be attentive and check if the result matches with the treatment goal of my patient. I can be satisfied with a score of 7 but the patient might not be satisfied because he wants a 10.
<b>Organizational level</b>	PT30	I think it can help in testing how we are working with a particular symptom. You have the incoming data of a physical therapist and there is an outgoing flow of advices, movement advices, exercise advice, methods you use to achieve results. Well, then you can compare with each other if similar data or information have similar results. So I think it can create intercollegial learning.
	PT24	For example if I start and I have a baseline score which is very bad, and after 15 treatments it's very good. And my colleague reaches the same result after 8 treatments. Then we have a difference of 7 treatments.
	PT31	Outcome measures can be applied at all levels of treatment, within the communication, within intercollegial discussions. Everywhere there is a value for an outcome measure. You can change something subjective to something objective with the use of an outcome measure. So there is a value that you should not forget.
<b>Societal level</b>	PT6	Yes, the use of outcome measures is very important because it improves quality of care, and I think in the future you really have to prove towards health insurance companies that what you do is justified. So in this regard, it is a must and therefore I think it is good.
	PT23	I think it might be positive for the professional group to become more businesslike. Of course, without letting the patient contact becoming too

		businesslike. But in a way that you can prove more that what you're actually doing, is effective. I think that is important.
	PT23	I use the results for myself and sometimes also in the communication with general practitioners and specialist. Especially specialists require the results of outcome measures. Yes, instead of a letter saying it went well, you can objectify the result. That also shows a more professional attitude.
<b>Facilitators and barriers</b>		
<b>Patient-physical therapist level</b>	PT24	But the larger the outcome measure the more difficult it gets when they don't speak the Dutch language. In those situations I won't hand one out.
	PT13	Yes I tried questionnaires. But then I keep on thinking it doesn't fit my patient. And what should I do with the results? I have no idea.
	PT6	I'm e.g. more accustomed to working with the Borg scale, so therefore I choose the Borg Scale. While the question might be whether you can use the Borg Scale that way, I do not know, I use it.
	PT24	The worst, I think is that I need to get a paper form and put it on the table. That is what bothers me. When it is digitalized, I click and then I can immediately fill it in.
	PT6	There are also drawbacks; it takes time and organization, but that perhaps is a matter of experience and use.
	PT30	The tests that I find little useful might be because I don't know them enough. I will have to go over the content of them more, without a patient being present, and then I might learn that they can be useful. Now I only use the tests, I have experienced as useful and that is a small number. But it will continue to expand over time.
	PT11	Well, I've obviously heard a bit of what they said, that it takes some time and I have to agree. But actually, I think it is a very bad excuse. It often really takes 3 minutes time, so I think that should not be a reason not to do it. But I think I somewhat agree with PT10, it is not a routine, and especially I do not know all the outcome measures that well. So I do not know when best to use which outcome measure.
	PT2	Well the DASH I didn't calculate myself. I found the calculation of the score so damn complicated. I really just forgot how it was. Yes, you had to divide something by 25 minus 1.
	PT30	But it is always a combination of easy and quick to administer.
	PT30	The longer a test, the more difficult it gets to actually implement it. Because it costs treatment time and organization to administer.
	PT2	It's ingrained behavior. PT30 and I have already had several years of experience. When you've learned this 35 years ago it's difficult afterwards to change your behavior and adapt. It has to do with behavior.
<b>Organizational level</b>	PT13	I can certainly envision managers reviewing if we did achieve our results or not in the future. And will benchmark us opposed to other health care centers.
	PT13	I guess for me it's unfamiliarity with the instrument. I can't see if I've got a choice, enough freedom, afterwards. Because you don't know exactly what we're measuring and how it's used in the future.
<b>Societal level</b>	PT24	In the future the health insurance company just wants to see what treatment you have given and how many treatments you needed. The consequence is that you consider every patient to be the same and that's not true. I do believe however that outcome measures could objectify patterns.

PT = SGE Physical therapist

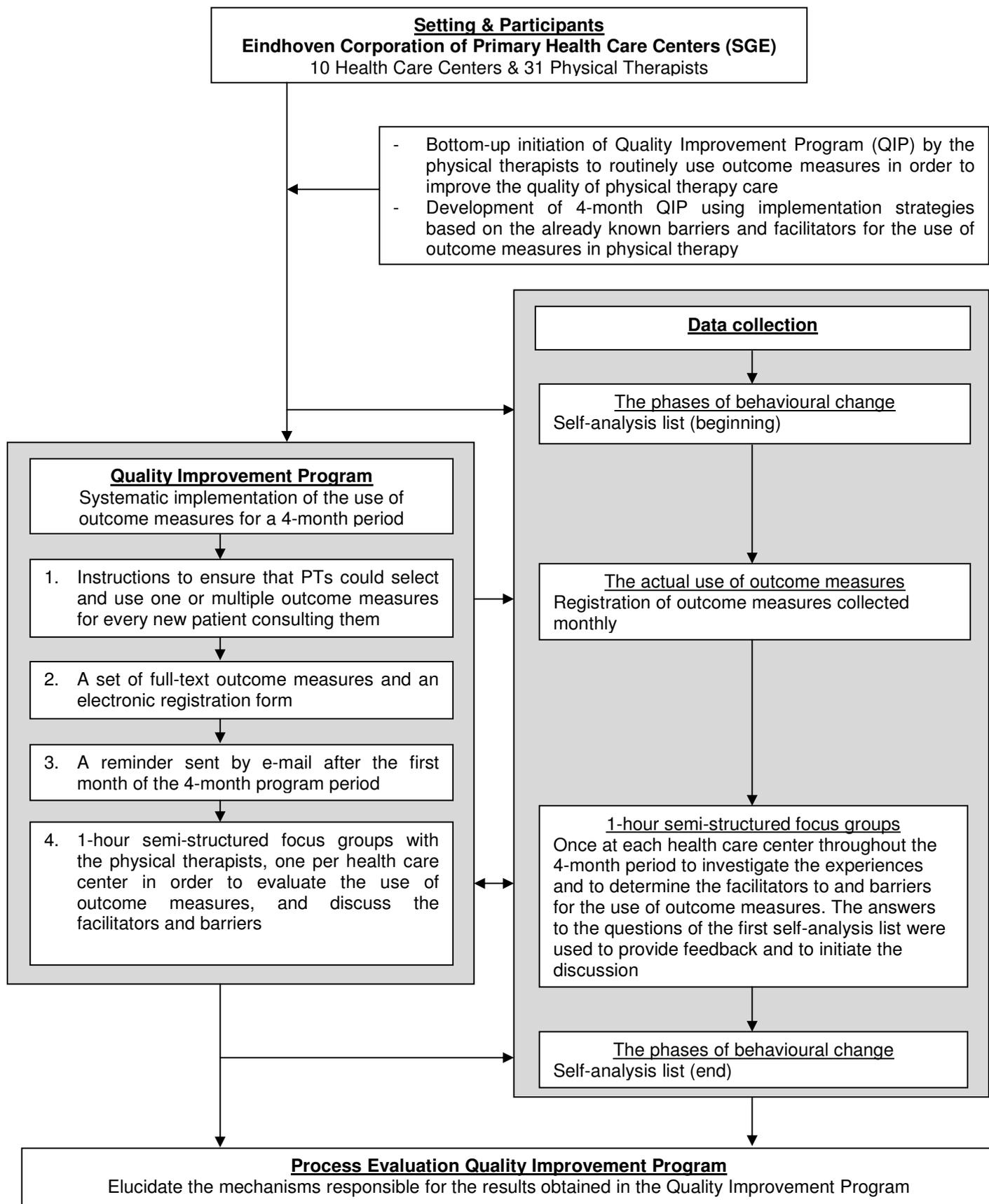


Figure 1: Flowchart quality improvement program, data collection and process evaluation

## **Appendix**

### APPENDIX A: Preferable set outcome measures

## APPENDIX A: Preferable set outcome measures (11-13)

Domain ICF	OM	Purpose	Short description
<b>Health Condition</b>			
	<b>PSK*</b>	I, D, E	The PSK is used as a measurement to assess the functional status of the individual patient. The patient selects 3 to 5 major problems in the area of physical activity. These activities should be relevant (important), the patient should be hampered in the execution and the execution must take place regularly (weekly)
<b>Impairments</b>			
*Pain	<b>NRS &amp; VAS</b>	I, E	Patient-completed measure consisting of a 10cm continuous line anchored at each end with a statement representing the extremes of the dimension being measured, usually pain intensity. The subject indicates by a pen mark on the line the present pain level
*ROM	<b>Goniometer</b>	D, E	To assess Range of Motion or movement angle of a joint
*Strength	<b>HHD</b>	I, E	Using a HHD, the isometric muscle strength of various muscle groups can be determined.
<b>Activity &amp; Participation</b>			
*Shoulder	<b>DASH</b>	I, E	Patient-completed 30-item questionnaire measuring physical and social function together with symptom impact in upper limb disorders. Also contains optional sport/music and work specific sections
*Shoulder	<b>SPADI</b>	I, E	The SPADI is a questionnaire with 13 items, divided into the categories pain and restriction in activities. It assesses the degree of pain or limitations caused by shoulder problems over the last week. The patient answers the questions using an NRS or VAS scale. The higher a patient scored on the SPADI the greater the pain / disability in activities
*Cervical Spine	<b>NDI</b>	I, E	Patient-completed, condition-specific functional status questionnaire, based on the Oswestry low back pain questionnaire. 10 items including pain, personal care, lifting, reading, headaches, concentration, work, driving, sleeping and recreation
*Lumbar Spine	<b>QBPDS</b>	E	Patient-completed 20-item questionnaire designed to assess level of functional disability in individuals with back pain using 6 domains of activity: bed rest; sitting/standing; ambulation; movement; bending/stooping; handling large/heavy objects
	<b>ALBPSQ</b>	I	The ALBPSQ is a biopsychosocial screening tool to predict which patients with acute back pain are at higher risk for developing chronic low back pain. The questionnaire consists of 24 items divided into five categories
*Hip	<b>Lal Hip</b>	I, E	An index of severity for osteoarthritis for the hip which can be used to assess the effectiveness of therapeutic interventions
*Knee	<b>Lal Knee</b>	I, E	An index of severity for osteoarthritis for the knee which can be used to assess the effectiveness of therapeutic interventions
	<b>LH</b>	E	The LH is a patient self-completed questionnaire consisting of eight items. The questionnaire was developed for mapping the degree of knee instability. A high scoring on the Lysholm score list corresponds to a slight degree of knee instability
	<b>Tas</b>	I, E	The Tas contains 1 item in which the patient indicates the severity of his / her work and sports activities. The scoring ranges from 0 to 10. A high score represents a high level of activity
*Ankle	<b>FSe**</b>	I, P	A function and prognostic score for a patient with a lateral ankle sprain. This can help determine the probably outcome
	<b>OAR</b>	D	The OAR are guidelines for the determination of making an x-ray of ankle and midfoot to detect fractures (up to 7 days after injury). They help clinicians to be selective in making radiographs and to reserve for cases where a fracture is likely
<b>Participation</b>			
	<b>6MWT</b>	I, D, E, P	The 6MWT is used to assess endurance of patients. The test is used in patients with respiratory disorders, knee-hip arthritis, cardiovascular patients, Parkinson's disease, lung disease and other chronic diseases.
<b>Personal Factors</b>			
	<b>4DKL**</b>	D, I	The 4DKL is a questionnaire comprising 50 items, focused on psychosocial problems. The list was developed in general practice to distinguish between a-specific 'distress', depression, anxiety, and somatization
	<b>TSK</b>	I, P, E	Patient-completed questionnaire concerning fear of movement/re-injury in chronic pain. Consists of 17 questions each scored on a 4 point Likert scale from strongly disagree to strongly agree
	<b>SES</b>	I, E	10 statements about how a patient in general thinks and does
<b>Health Condition</b>			
	<b>GPE</b>	E	Using the GPE the opinion of the patient on recovery is determined.

ICF = International Classification of Functioning, Disability and Health, OM = Outcome measure, ROM = Range of Motion, I = inventory, D = Diagnostic, E = Evaluative, P = Prognostic, PSK = Patient Specific Complaint, NRS = Numeric Rating Scale, VAS = Visual Analogue Scale, HHD = Hand Held Dynamometer, DASH = Disability of Arm-Shoulder-Hand, SPADI = Shoulder Pain and Disability Index, NDI = Neck Disability Index, QBPDS = Quebec Back Pain Disability Questionnaire, ALBPSQ = Acute Low Back Pain Screenings Questionnaire, Lal = Lequesne-algofunctional Index, LH = Lysholm-score, Tas = Tegner activity scale, FSe = Functionscore enkelgewricht (Dutch), OAR = Ottawa Ankle Rules, 6MWT = 6-Minute Walk Test, 4DKL = Vierdimensionale Klachtenlijst (Dutch), TSK = Tampa Scale of Kinesiophobia, SES = Self Efficacy Scale, GPE = Global Perceived Effect

\*Patient Specific Complaint (PSK) is comparable to the Patient Specific Functional Scale, \*\*Only available in Dutch language