

Stepped Care Strategy
for patients with hip and/or knee
osteoarthritis in Primary Care:
a retrospective analysis
of medical record data

Masterthesis

Physiotherapy Science

Program in Clinical Health Sciences

Utrecht University

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"ONDERGETEKENDE

Niek Henricus Gerardus Koenders

bevestigt hierbij dat de onderhavige verhandeling mag worden geraadpleegd en vrij mag worden gefotokopieerd. Bij het citeren moet steeds de titel en de auteur van de verhandeling worden vermeld."

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Masterthesis, Physical Therapy Sciences, Program in Clinical Health Sciences, Utrecht University, Utrecht, 2015

SAMENVATTING

Achtergrond

Het gebruik van conservatieve behandeling bij patiënten met heup- en/of knieartrose is niet optimaal. Er wordt weinig verwezen naar fysiotherapie, onnodig veel gebruik gemaakt van röntgendiagnostiek en weinig pijnmedicatie voorgeschreven. Hierdoor ontvangt het merendeel van de patiënten geen adequate conservatieve behandeling voordat ze bij de orthopeed komen. Om het gebruik van conservatieve behandeling te verbeteren is de Primary Care Stepped Care Strategy Artrose ontwikkeld en op proef geïmplementeerd.

Doelstelling

Het zorggebruik en volgorde van zorg vergelijken voor en na proefimplementatie van de Primary Care Stepped Care Strategy Artrose bij patiënten met heup- en/of knieartrose.

Methode

Er werd een proef evaluatie uitgevoerd na implementatie van de Primary Care Stepped Care Strategy Artrose binnen vier eerstelijns gezondheidscentra. Hierbij werd gebruik gemaakt van een retrospectieve analyse van data uit elektronische patiëntendossiers. Data met betrekking tot zorggebruik en volgorde van zorg werd geëxtraheerd uit patiëntendossiers van huisartsen en fysiotherapeuten. Nieuw gediagnosticeerde patiënten met heup- en/of knieartrose werden voor en na proefimplementatie geïncludeerd.

Resultaten

Er werden 28 patiënten geïncludeerd: 11 voor en 17 na proefimplementatie. Na proefimplementatie ontving een hogere proportie van patiënten fysiotherapie en pijnmedicatie. Een lagere verhouding van patiënten ontving röntgendiagnostiek en secundaire zorg. Na proefimplementatie ontving een hogere proportie van patiënten medicatie in de juiste volgorde en conservatieve zorg voor verwijzing naar de fysiotherapie in de juiste volgorde.

Conclusie

De resultaten suggereren dat de implementatie van de Primary Care Stepped Care Strategy Artrose een positieve invloed zou kunnen hebben op het zorggebruik en de volgorde van zorg bij patiënten met heup- en/of knieartrose.

Klinische relevantie

Implementatie van de Primary Care Stepped Care Strategy Artrose zou het gebruik van conservatieve behandeling bij patiënten met heup- en/of knieartrose kunnen optimaliseren en verwijzing naar secundaire zorg kunnen verminderen. Er is echter vervolgonderzoek nodig met een grotere steekproef om de resultaten te bevestigen.

Sleutelwoorden:

Artrose, zorggebruik, volgorde van zorg, conservatieve zorg, eerstelijnszorg, implementatie

Aantal woorden samenvatting: 298

Aantal woorden manuscript: 3752

ABSTRACT

Background

The use of non-surgical treatment in patients with hip and/or knee osteoarthritis is not optimal as studies show a poor referral to physical therapy, overuse of radiological assessments, poor prescription of medication to relieve pain, and inadequate referral to secondary care. To improve use of non-surgical treatment, the Primary Care Stepped Care Strategy Osteoarthritis was developed and implemented in the Julius Healthcare Centres.

Aim

To compare health care use and sequence of care in patients with hip and/or knee osteoarthritis before and after pilot implementation of the Primary Care Stepped Care Strategy Osteoarthritis.

Methods

A pilot evaluation was conducted after implementation of the Primary Care Stepped Care Strategy Osteoarthritis within four primary healthcare centres, using a retrospective analysis of medical records. Data on health care use and sequence of care were extracted from medical records of general practitioners and physical therapists. Newly diagnosed patients with hip and/or knee osteoarthritis were included before and after pilot implementation.

Results

The current study included 28 patients: 11 before and 17 after pilot implementation. After pilot implementation, a higher proportion of patients received physical therapy and medication to relieve pain. A lower proportion of patients received radiological assessments and secondary care. A higher proportion of patients received correct sequence of care before referral to physical therapy and medication according to the correct sequence after pilot implementation.

Conclusion

The results suggest that implementation of the Primary Care Stepped Care Strategy Osteoarthritis might positively influence health care use and sequence of care in patients with hip and/or knee osteoarthritis.

Clinical Relevance

Implementation of the Primary Care Stepped Care Strategy Osteoarthritis might improve use of non-surgical care and decrease referral to secondary care in patients with hip and/or knee osteoarthritis. However, further research in a larger sample is needed to confirm the results.

Keywords:

Osteoarthritis, health care use, sequence of care, non-surgical care, primary health care, stepped care

Word count summary: 297

Word count Master thesis: 3752

INTRODUCTION

Hip and/or knee osteoarthritis (OA) has a major impact on physical functioning in daily life and frequently leads to moderate to severe limitations in participation and a decreased quality of life.(1) The burden of hip and knee OA continues to increase in the future due to the aging world-wide population and a prevalence of OA that increases with age.(2, 3) To decrease health care demand and expenditure, non-surgical treatments such as physical therapy and medication are widely recommended.(4-7) Non-surgical treatments aim to reduce symptoms, improve joint function, reduce physical disability and improve participation.(5, 8-10)

Although non-surgical treatment is recommended in national and international guidelines for the treatment of hip and/or knee OA, the use of these treatments is currently not optimal.(11) For example, earlier research has shown that 81% of the patients referred to secondary care did not receive adequate conservative treatment modalities prior to referral.(12) Several studies show that only a minority of patients is referred to physical therapy, before referral to secondary care.(13, 14) Poor referral to physical therapy is suggested to lead to underuse of effective non-surgical treatment(7) and poor patient selection and timing of surgery (15). Furthermore, general practitioners (GPs) often refer for radiological assessment in diagnostics of OA.(16) The use of radiological assessment in early stages of OA is however not recommended in guidelines, because outcomes of radiological assessments are supposed to have a minimal contribution to clinical decision making.(4) In addition, previous research has shown that use of radiological assessment in patients could increase inadequate referral to physical therapy and secondary care.(17) At last, earlier research has shown that many GPs consider non-steroidal anti-inflammatory drugs (NSAIDs) as drug of first choice(18), despite an increased risk on adverse side effects due to frequent use of NSAIDs in older adults(19). Guidelines recommend use of acetaminophen in the early stages of OA.(4, 6, 7) The inadequate use of non-surgical treatment in patients with hip and/or knee OA is likely to further increase health care expenditure and decrease efficiency of treatment.

To improve the use of non-surgical treatment in chronic diseases, a stepped care approach is recommended.(20, 21) Relatively simple treatment modalities (e.g. acetaminophen, education, and life-style advice) should be considered primarily, and care in higher steps is reserved for those not helped by lower-step care. Smink et al. (22) developed an evidence-based multidisciplinary stepped care strategy (SCS) for patients with hip and/or knee osteoarthritis. This SCS is called BART and consists of recommendations based on expert opinion, national and international guidelines. BART contains useful recommendations although some limitations should be mentioned. Firstly, the long-term effects of BART on degree of pain, physical function, self-efficacy, and active pain coping in patients with hip and/or knee OA seem limited.(23) Therefore, some adaptations to BART are already suggested such as more influence of contextual factors. For example, BART does pay limited attention to the severity of complaints resulting in time-centered care instead of patient-

centered care and consequently provides insufficient opportunities for shared decision making between care giver and patient. However, shared decision making is very important to improve patient engagement in their care and knowledge about the risks and benefits of various treatments options for hip and/or knee OA.(24) Secondly, BART does not provide specific recommendations regarding content of physical therapy which could lead to inadequate physical therapy guidance. Thirdly, some recommendations are outdated such as the use of glucosamine sulfate and transcutaneous electrical nerve stimulation.(7, 25)

Because of these limitations, general practitioners and physical therapists of the Leidsche Rijn Julius Healthcare Centre modified and updated BART to a primarily severity-contingent and patient-centered SCS. This strategy is called the Primary Care SCS-OA (appendix 1) and aims to: (i) improve patient-centered care in patients with hip and/or knee OA, (ii) provide specific recommendations regarding the content and sequence of care (iii), and standardize and uniform care by both general practitioners (GPs) and physical therapists (PTs). A summary of recommendations of the Primary Care SCS-OA is presented in figure 1.

It is expected that use of non-surgical treatment in patients with hip and/or knee OA will improve after implementation of the Primary Care SCS-OA. Implementation of the Primary Care SCS-OA aims to increase use of recommended health care such as physical therapy and acetaminophen. In addition, use of non-recommended health care such as radiological assessments and NSAIDs should decrease. Implementation of the Primary Care SCS-OA intends to improve both health care use and sequence of care according to the predefined successive order, ultimately resulting in improved effectiveness and efficiency of non-surgical and surgical treatment in patients with hip and/or knee OA. Preliminary effects of implementation of the Primary Care SCS-OA should be evaluated with a pilot implementation. Therefore, the aim of the current study is to compare health care use and sequence of care in patients with hip and/or knee osteoarthritis before and after pilot implementation of the Primary Care SCS-OA in a multidisciplinary primary care setting.

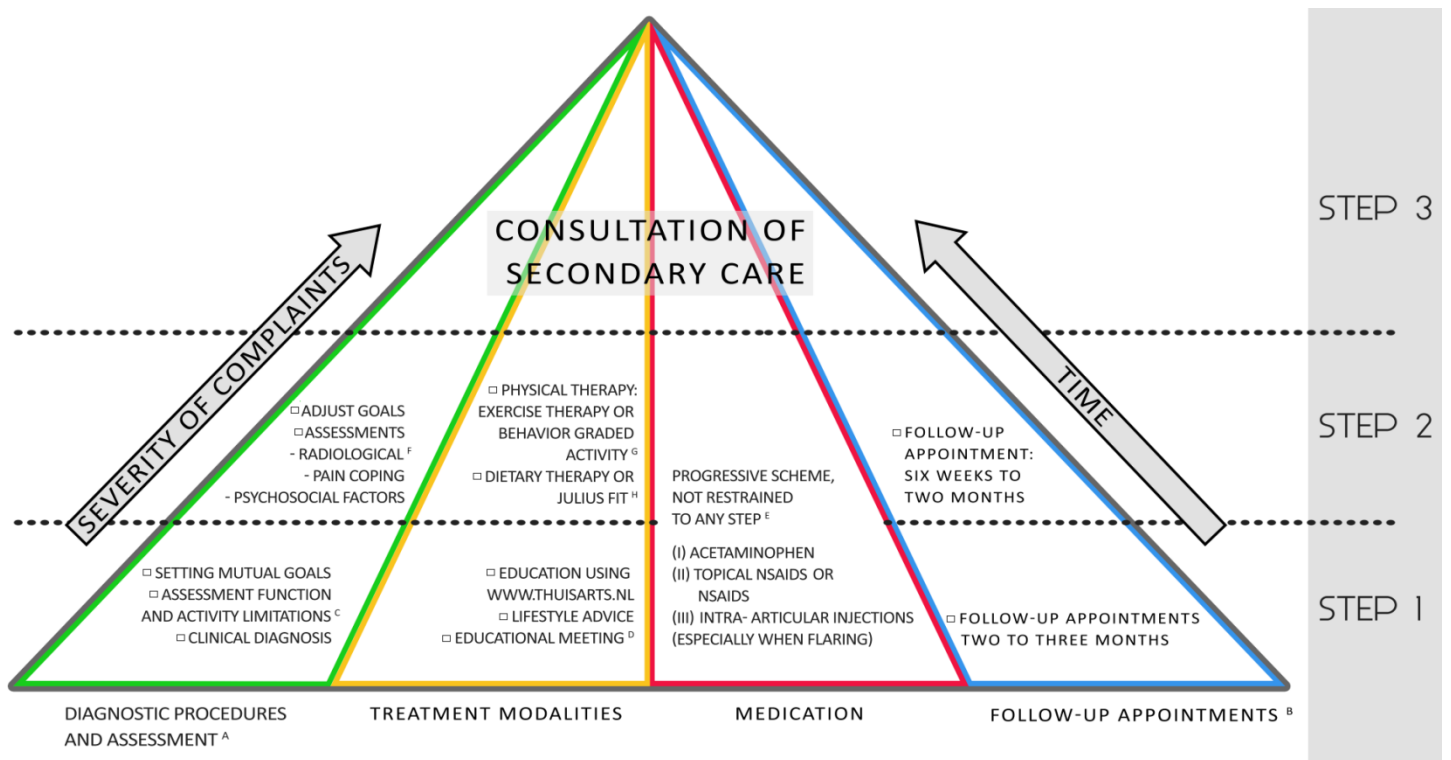


Figure 1: Summary of recommendations according to the Primary Care Stepped Care Strategy for patients with hip and/or knee osteoarthritis.

^A Every step contains examination of medical history and physical functions.

^B Evaluation of medication after one to two weeks after first visit.

^C Physical therapy and step 2 care should be used if Algofunctional Index > 4.

^D In case of suspected passive coping strategy.

^E Consult guidelines for adequate dose.(4, 26)

^F If there is a severe discrepancy between medical history and physical examination.

^G In case of a low level of physical functioning, kinesiophobia and/or fear avoidance beliefs.

^H In case of severe overweight (Body Mass Index > 30kg/m²). Julius Fit is a low-care program managed by fitness instructors, which ultimately aims to improve lifestyle and health.

METHODS

Development of Primary Care SCS-OA

A modified version of BART(22) (appendix 2) was developed using the development-evaluation-implementation process described by the Medical Research Council (27). The development was performed by members of a steering group, representing the main disciplines involved in primary OA care: a general practitioner, physical therapist and researcher. The developmental phase started with identification of the best evidence through a review of literature by members of the steering group. Subsequently, core recommendations and treatment modalities were identified. Thereafter, recommendations and treatment modalities were modelled based on new literature and consensus of members of the steering group which resulted in the Primary Care SCS-OA. The developmental phase ended with determination of primary outcomes concerning health care use and sequence of care. The feasibility/piloting phase started 1 October 2014 with testing procedures, estimating recruitment and determining sample size. The current study is part of the evaluation phase assessing effectiveness of the pilot implementation.

Pilot implementation Primary Care SCS-OA

Patients were treated according to the Primary Care SCS-OA starting 1 October 2014. Before 1 October 2014, both GPs and PTs participated in an educational meeting providing detailed information about the purpose and content of the Primary Care SCS-OA. Absent GPs and PTs were informed individually. Practical issues such as time needed per consultation and referral policy were addressed and solutions suggested. The educational meetings ended with a thorough analysis of a fictitious case of a patient with OA and an overview of the core recommendations. All GPs and PTs received handouts and flyers with a summary of recommendations. Detailed information remained available at all time at the digital workspace. A two-monthly reminder of the core recommendations was mailed to all employed GPs and PTs starting after education.

Study design

A retrospective analysis of medical record data was conducted to evaluate the pilot implementation of the Primary Care SCS-OA within the Leidsche Rijn Julius Healthcare Centers over a period of seven months. The General Practitioners Information System (GPIS) and Fysiomanager were used to extract data. The GPIS and Fysiomanager are electronic medical records and contain data of all patient contacts, including patient characteristics, diagnostic procedures, treatment and evaluation. The patients were identified in the databases of four participating practices of Leidsche Rijn Julius Healthcare Centers, situated in a newly developed urban area in Utrecht. The current study was conducted in accordance with the principles of the Declaration of Helsinki and other guidelines, regulations and Acts (Medical Treatment Agreements Act and Personal Data Protection Act in specific). The

Medical Ethics Review Committee (MERC) of the University Medical Center Utrecht declared no need for official approval of this study under the Medical Research Involving Human Subjects Act. Reference number: WAG/om/15/001604.

Study population

All newly diagnosed patients with hip and/or knee OA visiting the GP and/or PT between 1 October 2013 and 31 January 2014 (before pilot implementation) or 1 October 2014 and 31 January 2015 (after pilot implementation) were selected. In GP practices, the patients were identified using the 'International Classification of Primary Care' (ICPC) codes L89 'hip OA' or L90 'knee OA'.(28) In PT practices, patients were identified using the Diagnosis Coding System Allied Healthcare' (DCSAH) codes 62 'articulatio coxae' or 70 'articulatio genus' combined with 22 'chondropathy' or 23 'OA'.(appendix 3) Eligible were patients with newly diagnosed hip and/or knee OA aged eighteen years or older. Patients were excluded if diagnosed with hip and/or knee complaints other than hip and/or knee OA. Eligibility of all patients was checked twice.

Data collection

Data were collected from 1 October 2013 until 30 April 2014 (before pilot implementation) and 1 October 2014 until 30 April 2015 (after pilot implementation). Therefore, two groups were created: one before pilot implementation and one after pilot implementation. (see figure 2) The length of data collection period exceeds the inclusion period for three months in order to collect data regarding follow-up. Data were extracted from the GPIS and Fysiomanager with help of case report forms two times on different dates. Inconsistencies in data extraction were solved by checking the medical records.

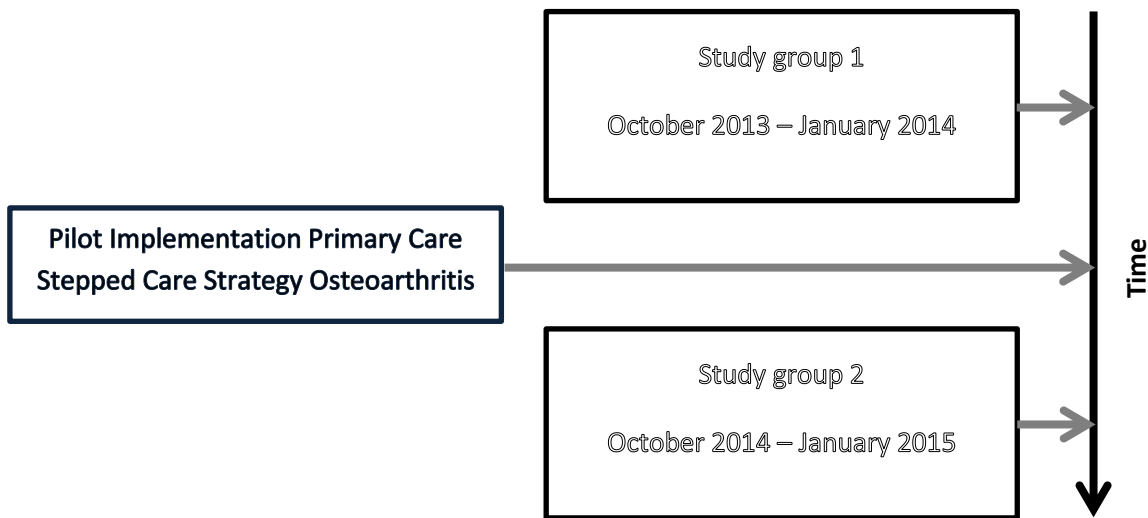


Figure 2: Graphical display of study groups

Outcome measures

Patient characteristics - Patient characteristics such as gender, age, physical functioning (measured with Algofunctional Index score (29) (appendix 4 and 5)), location of OA and side of OA were collected. Time in study was determined per patient by calculating difference in days between 'date of first visit GP or PT' and 'end of date collection' (30 April 2014 or 30 April 2015).

Health care use - Health care use was defined as 'offering or using diagnostic procedures, treatment modalities, medication and evaluation related to OA of the hip and/or knee'. Outcomes concerning health care use are described in table 1.

Table 1: Operationalization of health care use conform guideline recommendations[†] in patients with hip and/or knee OA

| | Diagnostic procedure or treatment modality | Positively assessed if GP or PT medical record contains |
|---------------|---|--|
| Step 1 | <ul style="list-style-type: none"> - Diagnosis based on clinical criteria - Education or lifestyle advice - Prescription of recommended medication to relieve pain | <ul style="list-style-type: none"> No use of radiological assessment ≥2 consults or visits to GP or PT due to hip and/or knee OA within three months of follow-up ≥1 advice(s) to use or prescription of an 'other analgesic and antipyretic product'^a, 'non-steroid anti-inflammatory preparation for topical use'^b, 'non-steroid anti-inflammatory and anti-rheumatic product'^c, or intra-articular injection. |
| Step 2 | <ul style="list-style-type: none"> - Physical therapy - Referral to dietary therapy or Julius Fit - Follow-up appointment | <ul style="list-style-type: none"> ≥1 referral(s) to physical therapy or use of ≥1 physical therapy treatment session(s) due to hip and/or knee OA ≥1 referral(s) to dietary therapy or Julius Fit in case of BMI > 30 ≥1 consult(s) or visit to GP or PT after discharge from physical therapy treatment within two months of follow-up |
| Step 3 | <ul style="list-style-type: none"> - Referral to secondary care | <ul style="list-style-type: none"> ≥1 referral(s) to secondary care (e.g. orthopedic surgeon) due to hip and/or knee OA |

Abbreviations: BMI, Body Mass Index; GP, General Practitioner; OA, osteoarthritis; PT, Physical Therapist

[†] Guidelines: CBO, NHG and KNGF.

Anatomical Therapeutic Chemical (ATC) codes:

^a N02B

^b M02AA

^c M01A

Sequence of care - Sequence of care was defined as 'offering or using diagnostic procedures, treatment modalities, medication and evaluation in a predefined, successive order'.

The number of patients who received care according to the recommended sequence by the Primary Care SCS-OA was determined with in-depth analysis of textual data. Compliance to the recommended sequence of care, as defined in table 2, was analyzed per patient.

Table 2; Operationalization of sequence of care according to the Primary Care SCS-OA

| | Diagnostic procedure or treatment modality | Positively assessed if GP or PT medical record contains |
|--------|---|---|
| | - Prescription of medication to relieve pain | Advice to use or prescription of medication in the following sequence: (i) an 'other analgesic and antipyretic product' ^a , (ii) a 'non-steroid anti-inflammatory preparation for topical use' ^b or a 'non-steroid anti-inflammatory and anti-rheumatic product' ^c , (iii) an intra-articular injection |
| Step 2 | - Physical therapy - Referral to dietary therapy or Julius Fit | Algofunctional Index > 4 or received all step 1 modalities (as defined in table 1) At referral: BMI > 30. In addition: Algofunctional Index > 4 or received all step 1 modalities (as defined in table 1) |
| Step 3 | - Referral to secondary care | At referral: received all prior step 1 and step 2 modalities (as defined in table 1) in Primary Care SCS-OA recommended sequence; Dietary therapy or Julius Fit only if BMI > 30 |

Abbreviations: BMI, Body Mass Index; GP, general practitioner; OA, osteoarthritis; PT, physical therapist; SCS, stepped care strategy

Anatomical Therapeutic Chemical (ATC) codes:

^a N02B

^b M02AA

^c M01A

Statistical analysis

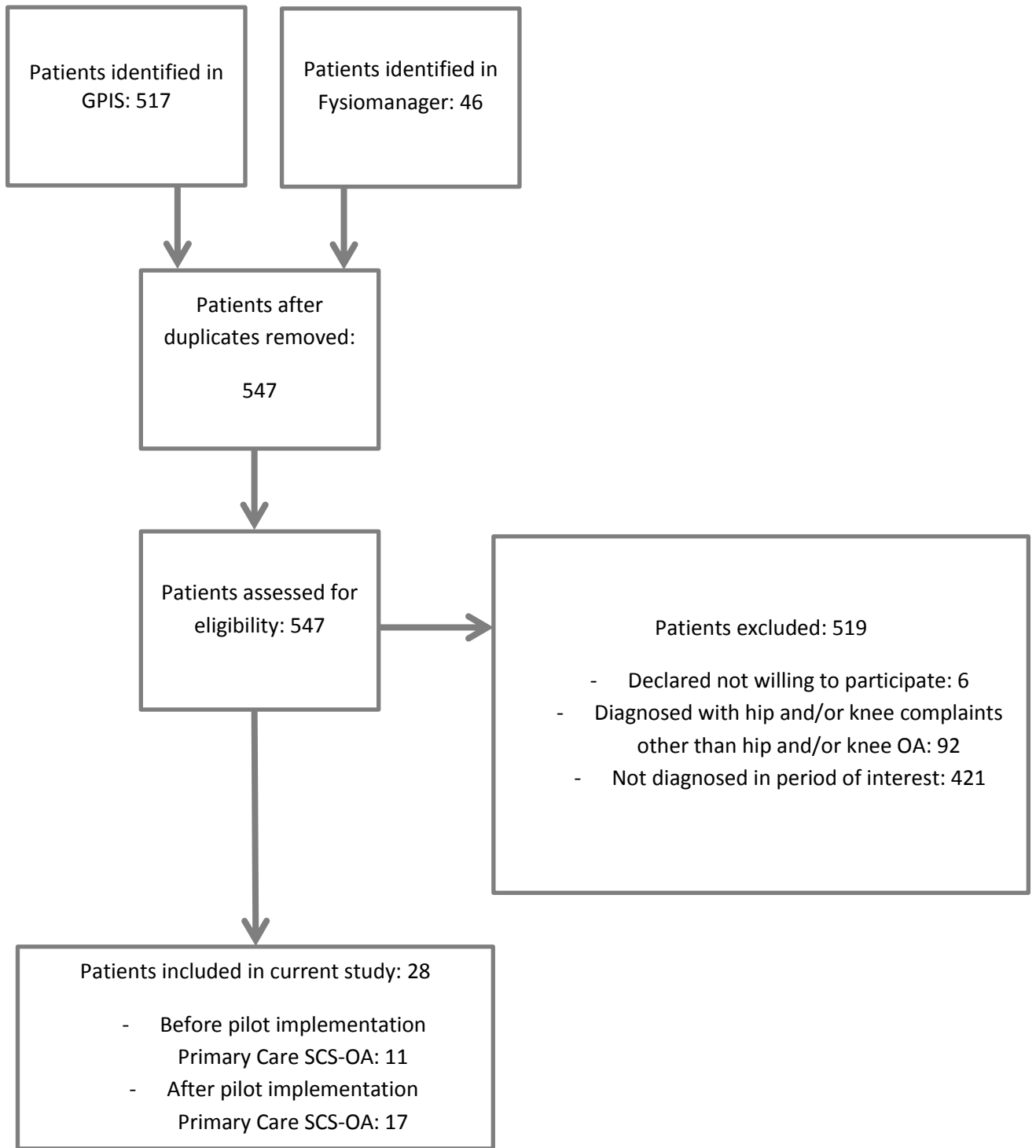
Descriptive statistics were performed to describe patient characteristics. Differences in characteristics of both study groups (before and after pilot implementation) were analyzed with Chi-square test for categorical variables and independent t-test or Mann-Whitney U test for continuous variables.

The outcomes regarding health care use and sequence of care were dichotomous and therefore analyzed with Chi-square test to detect differences in proportions between study groups. Yates' continuity correction was applied if a minimum expected cell frequency was lower than 5.(30, 31) P-values lower than 0.05 were considered significant.

RESULTS

Patient selection

In total, 547 patients were identified in the GPIS and Fysiomanager. (see figure 3) The current study included 28 patients with hip or knee OA: 11 before and 17 after pilot implementation of the Primary Care SCS-OA. Most patients were excluded due to 'not diagnosed in period of interest'. Ninety-two patients were excluded based on 'diagnosed with hip and/or knee complaints other than hip and/or knee OA' such as total joint replacement after traumatic injury, traumatic meniscal lesion, retropatellar chondropathy, or bursitis trochanterica.



Abbreviations: GPIS, general practitioner information system; OA, osteoarthritis; SCS, Stepped Care Strategy

Figure 3; Flow diagram of the patient selection

Patient characteristics

The majority of patients included was female (68%) and suffered from knee OA (64%). (see table 3) The age ranged between 41 and 87 years (mean 65.75 ± 12.35). There was a higher median time in the study group of patients after pilot implementation of the Primary Care SCS-OA (114 days versus 171 days; p = 0.006). Body Mass Index (BMI) was reported in 13 patients, 6 patients had a BMI greater than 30 kg/m².

Table 3; Characteristics of patients with hip or knee osteoarthritis, presented for all patients, before pilot implementation, and after pilot implementation.

| | All patients | Before implementation | After implementation | Difference † (p-value) |
|--|---------------------|------------------------------|-----------------------------|-------------------------------|
| N | 28 | 11 | 17 | |
| Gender, female (n, %) | 19 (68%) | 6 (55%) | 13 (76%) | 0.424 ‡ |
| Age, years (mean, SD) | 65.75 (±12.35) | 62.55 (±13.27) | 67.82 (± 11.65) | 0.277 |
| Time in study group, days (median, IQR) | 157 (72) | 114 (36) | 171 (46) | 0.006 § |
| BMI > 30 (n, %) | 6 (46%) | 1 (25%) | 5 (56%) | 0.676 ‡ |

Missing BMI: N = 15

Abbreviations: BMI, Body Mass Index; IQR, interquartile range; N, number of patients; SD, standard deviation

† Difference between groups: before pilot implementation versus after pilot implementation

‡ Yates' continuity correction

§ Mann-Whitney U test

Health care use

Overall, there was an increase in use of modalities as recommended by the Primary Care SCS-OA. (see table 4) The most frequently used modalities were: diagnosis based on clinical criteria, prescription of recommended medication to relieve pain, and physical therapy. A higher proportion of patients was diagnosed based on clinical criteria after pilot implementation, accordingly a decrease in the use of radiological assessment was found. In addition, a higher proportion of patients received a prescription of recommended medication to relieve pain. Fourteen patients received acetaminophen (5 before versus 9 after pilot implementation), eight patients received NSAIDs (3 versus 5), and three patients received an intra-articular injection (1 versus 2). One patient before pilot implementation received oral corticosteroids. There was no prescription of glucosaminesulphate or opioids. Furthermore, there was an increase in proportion of patients referred to or visiting physical therapy after pilot implementation. One patient before pilot implementation did not visit physical therapy whereas a referral was given. At last, a lower proportion of patients was referred to secondary care after pilot implementation. There were no significant differences in health care use before and after pilot implementation of the Primary Care SCS-OA.

A lower proportion of patients received education or lifestyle advice after pilot implementation. Two patients before and five patients after pilot implementation did not consult or visit their GP or PT at all after diagnosis. Three patients (one before and two after pilot implementation) did not use any health care as recommended by the Primary Care SCS-OA. In addition, a lower proportion of patients received all step 2 modalities after pilot implementation which is primarily a result of a lower use of follow-up appointments.

Algofunctional Index was scored in one patient before and seven patients after pilot implementation. The scores ranged from 3.5 (small limitations) to 13.5 (very large limitations). One patient after pilot implementation with an Algofunctional Index score of 12.5 received no referral to physical therapy.

Table 4; Health care use of patients with hip or knee osteoarthritis, presented before pilot implementation and after pilot implementation.

| | Before implementation | | After implementation | | Difference † |
|---|------------------------------|-----|-----------------------------|-----|---------------------|
| | <i>N = 11</i> | % | <i>N = 17</i> | % | |
| Step 1 | | | | | |
| - Diagnosis based on clinical criteria | 5 | 45% | 10 | 59% | 0.488 |
| - Education or lifestyle advice | 3 | 27% | 2 | 12% | 0.588 ‡ |
| - Prescription of recommended medication to relieve pain | 6 | 55% | 11 | 65% | 0.887 ‡ |
| - Received at least one step 1 modality | 6 | 55% | 13 | 76% | 0.424 ‡ |
| - Received all advised step 1 modalities | 0 | 0% | 0 | 0% | |
| Step 2 | | | | | |
| - Physical therapy | 5 | 45% | 9 | 53% | 0.699 |
| - Referral to dietary therapy or Julius Fit | 0 | 0% | 1 | 6% | 1.000 ‡ |
| - Follow-up appointment | 3 | 27% | 4 | 24% | 1.000 ‡ |
| - Received at least one step 2 modality | 5 | 45% | 9 | 53% | 0.699 |
| - Received all advised step 2 modalities | 3 | 27% | 3 | 18% | 0.893 ‡ |
| Step 3 | | | | | |
| - Referral to secondary care | 2 | 18% | 2 | 12% | 1.000 ‡ |

Abbreviations: N, number of patients

† Difference between groups: before pilot implementation versus after pilot implementation

‡ Yates' continuity correction

Sequence of care

Correct sequence of care, as recommended by the Primary Care SCS-OA, was received by a higher proportion of patients after pilot implementation. Medication to relieve pain was prescribed according to the recommended progressive scheme in two patients (33%) before and six patients (55%) after pilot implementation of the Primary Care SCS-OA ($p = 1.000$). Acetaminophen was the only medication to relieve pain in two patients before and five patients after pilot implementation. One patient (9%) after pilot implementation received NSAIDs after trying acetaminophen first. Acetaminophen and NSAIDs were prescribed simultaneously in five patients, which is an incorrect sequence of prescribed medication to relieve pain. Sequence of care before referral to or use of physical therapy was performed correct in one patient (20%) before and five patients (56%) after pilot implementation ($p = 0.469$). All patients with a correct sequence of care before start of physical therapy had an Algofunctional Index score higher than 4. Sequence of care was received incorrect by all for patients with a referral to secondary care. All those patients with a referral to secondary care received radiological assessment, and two patients did not receive step 2 care.

DISCUSSION

The results of the current study suggest minor positive changes in health care use and sequence of care in patients with hip and/or knee osteoarthritis after pilot implementation of the Primary Care SCS-OA. Although no significant differences could be reported, the results suggest that implementation of the Primary Care SCS-OA might improve use of non-surgical care and decrease referral to secondary care in patients with hip and/or knee osteoarthritis.

Health care use

In the current study, 59% received diagnosis based on clinical criteria after pilot implementation which means that only 41% received radiological assessment. In the study of Smink et al.(32), radiological assessment is used in 55% of the patients during the first six months after inclusion. Smink et al.(32) research health care use after implementation of BART over a two-year period in 313 patients with hip and/or knee OA. In contradiction to the current study, patients with a new episode of hip or knee complaints visiting their GP receive five biannual questionnaires to collect data on OA care. A difference in study populations should therefore be noted, since the current study aimed at newly diagnosed patients. In the study of Smink et al.(32) especially male patients with symptoms for over 1 year receive unnecessary radiological assessments. However, the lower use of radiological assessment in the current study could be partly explained by successful implementation activities (e.g. educational meetings and use of reminders) as the use of radiological assessment decreased after pilot implementation.

The use of recommended medication to relieve pain after pilot implementation in the current study is also different compared to other studies. Barten et al.(13) and Belo et al. (33) report a use of acetaminophen in respectively 4% and 25% of the patients with hip and/or knee OA, which is very low. The difference in outcomes is probably a result of differences in data collection methods. Barten et al.(13) and Belo et al.(33) assume that the use of acetaminophen in their study is influenced by not registered over-the-counter selling of acetaminophen. Smink et al.(16) report a use of acetaminophen in 72% of the patients in the first six months of study after implementation of BART. However, the use of questionnaires in the study of Smink et al.(16) covers use of both prescribed and sold over-the-counter acetaminophen. The use of acetaminophen in the current study was 53% after pilot implementation. Data regarding use of acetaminophen was collected analyzing both prescriptions and textual data in the medical records. This data collection method covers only a part of the use of over-the-counter sold acetaminophen. Therefore, the actual use of acetaminophen of patients in the current study could be slightly higher than reported.

In the current study, a high proportion of patients (45% before and 53% after pilot implementation) received referral to or used physical therapy. This seems like a proper proportion, because only patients with moderate or severe complaints are recommended to receive a referral to or use physical therapy. Only Smink et al.(16) show similar results with a 51% use of exercise therapy after implementation of BART. Barten et al.(13) report a use of exercise therapy in only 5% of the patients. This difference in results is probably due to not registered use of direct-access physical therapy and moderate registration of referrals to physical therapy in the NIVEL Primary Care Database. However, Dhawan et al.(14) report similar findings in the United States: only 8.2% of the patients diagnosed with knee OA received physical therapy. Consequently, the high referral to or use of physical therapy in the current study in both the before and after pilot implementation group seems a result of adequate use of physical therapy as recommended by guidelines and thorough data collection. The higher referral to or use of physical therapy after pilot implementation could be partly explained by successful implementation activities (e.g. educational meetings for both GPs and PTs).

Referral to secondary care is in line with two other studies. The current study showed a use of secondary care in 12% of the patients after pilot implementation. Barten et al. (13) show equal results with use of secondary care in 13% of the patients. The study of Smink et al.(16) reports a use of secondary care in 28% in patients with a new episode of hip or knee symptoms due to hip or knee OA during the first six months of study after implementation of BART. The low referral to secondary care after pilot implementation in the current study is an encouraging result and might be interesting regarding adequate use of primary care.

Sequence of care

Two studies analyze sequence of care as compliance to the BART strategy.(13, 16) Recommendations concerning sequence of care before referral to physical therapy differ severely between the Primary Care SCS-OA and BART, which makes comparing results inappropriate. Results regarding prescription of medication and referral to secondary care can be compared appropriately.

Prescription of medication to relieve pain according to the recommended progressive scheme is analyzed in one other study. Barten et al.(13) show a correct use of NSAIDs in 7% of the patients which is almost equal to the 9% in the current study. This could be expected given that data analysis regarding medication sequence is comparable between studies. The low correct sequence of prescribed medication to relieve pain is alarming and should be addressed in future implementation activities, because frequent use of NSAIDs is associated with an increased risk on adverse side effects in older adults(19). An as high as possible correct sequence of prescribed medication to relieve pain should be aspired.

In the current study, zero patients received correct sequence of care before referral to secondary care. The study of Barten et al.(13) also reports zero patients with a correct sequence of care according to BART. Nevertheless, those results are affected by the low prescription of acetaminophen. Results of Smink et al. (16) show correct sequence of care before referral to secondary care in 21% of the patients. However, due to practical considerations it is possible that patients received a correct sequence of care in this study even when modalities were provided too late or inadequately. If for example exercise therapy took place before use of step 1 modalities, sequence of care could still be scored positive. The low correct sequence of care before referral to secondary care in the current study emphasizes the need for future implementation activities and research to improve and monitor sequence of care in patients with hip and/or knee OA.

A perfect sequence of care should not be aspired, because the care for patients with OA needs to be tailored to individual needs. For example, the choice for treatment modalities might be influenced by comorbidities and health insurance.(23) However, it seems reasonable that care as recommended by the Primary Care SCS-OA would be optimal care for the majority of the patients with hip and/or knee OA as it is care according to current guidelines.

Strengths and weaknesses of the study

The current study is the first reporting health care use of patients with hip and/or knee OA both before and after (pilot) implementation. Data before and after (pilot) implementation are necessary to determine whether a specific effect of implementation might be responsible for changes in health care use. Secondly, the current study is the first with a thorough analysis of sequence of care due to use of in-depth analysis of textual data. Two earlier conducted studies on stepped care modalities in patients with OA report no thorough

analysis of sequence of care due to practical considerations.(13, 16) This is unfortunate, because analysis of sequence of care provides results which emphasize the difficulties regarding inadequate non-surgical treatment in patients with hip and/or knee OA.

However, the current study has some limitations. Firstly, a low amount of patients was included as a result of a short inclusion period which decreases generalizability of the results. Further research in a larger sample is needed to confirm the results. Nevertheless, the study sample seems sufficient to provide insight in the potential effects of implementation of the Primary Care SCS-OA. Secondly, results regarding health care use might have been biased slightly due to the higher median time in study group of patients after pilot implementation. Patients are more likely to receive more care, both recommended and not recommended care, as they are longer in the study.(32) However in the current study, there was especially an increase in use of modalities recommended by the Primary Care SCS-OA instead of a general increase of health care use. This suggests that results regarding use of recommended health care are not severely affected by the difference in median time in study group. Thirdly, some modalities were difficult to evaluate appropriately due to available data. For example, there was no registration of actual provided education (e.g. information, educational material or use of www.thuisarts.nl) or use of educational meetings which makes proper analysis of use of education and lifestyle advice questionable.

Clinical relevance and recommendations for future research

It might be hypothesized with results of the current study that implementation of the Primary Care SCS-OA could lead to minor positive changes in use of non-surgical care in patients with hip and/or knee OA. Implementation in a multidisciplinary primary care setting could improve use of non-surgical care and decrease referral to secondary care in patients with hip and/or knee OA. At first, future research with a two-year inclusion period seems necessary to adequately increase the number of included patients and confirm the results. Furthermore, research should finally concentrate on assessing cost-effectiveness to make results more useful for policymakers.(27)

CONCLUSION

The results of the current study suggest that pilot implementation of the Primary Care SCS-OA in a multidisciplinary primary care setting might positively influence health care use and sequence of care in patients with hip and/or knee OA. However, further research in a larger sample is needed to confirm the results.

APPENDIXES

Appendix 1: Details Primary Care Stepped Care Strategy Osteoarthritis

The Primary Care SCS-OA helps to provide optimal care as recommended by current guidelines.(4-7, 26) There are no new treatment modalities suggested. The strategy helps to use recommended health care at the right time and in the right sequence. The Primary Care SCS-OA is primarily severity contingent and patient-centered, aiming to help shared decision making between care giver and patient.

The recommendations of the Primary Care SCS-OA are divided in three steps. (see figure 1) Step 1 care is recommended primarily, and care in higher steps is reserved for those not helped by lower-step care. Type of medication is not restrained to any step, but described as a progressive scheme:

1. Acetaminophen
2. Topical NSAIDs or NSAIDs
3. Intra-articular injections (especially when flaring).

Guidelines should be consulted for an adequate dose.(4, 26) GPs are allowed to prescribe all types of medication. PTs are allowed to prescribe acetaminophen. A patient will be referred from PT to GP when use topical NSAIDs, NSAIDs or intra-articular injections is indicated.

Step 1 – Hip and/or knee OA is clinically diagnosed by GP or PT with use of clinical diagnostic criteria, examination of medical history and physical functions. Limitations in function and activity are assessed using the Algofunctional Index (29). Treatment consists of education about OA using www.thuisarts.nl and lifestyle advice. Patients with a suspected passive coping strategy are strongly advised to participate in an educational meeting. Type and dose of medication is evaluated within one or two weeks. A follow-up appointment to evaluate treatment goals takes place within two to three months. Patients are referred to physical therapy and receive step 2 care immediately if the score on the Algofunctional Index exceeds 4.

The diagnostic criteria of hip and/or knee OA are(4): : (i) long lasting joint pain while using hip or knee, (ii) age above 50 years, (iii) morning stiffness lasting 30 minutes or less, (iv) increase of complaints during day (concurrent with use of the joint), (v) pain after start of movement. Criteria which improve likeliness of hip and/or knee OA are: (i) female, (ii) overweight, (iii) positive family history, (iv) heavy and repeated physical work in history, (v) hip; dysplastic hip in (family) history, knee; trauma or surgery of knee in (family) history, (vi) hip; impaired adduction, pain while palpating inguinal ligament, knee; crepitation, palpable joint deformity, observable varus or valgus deformity.

Step 2 – Medical history (GP or PT), physical functions (GP or PT), pain coping (PT) and psychosocial factors (PT) are examined. Radiological assessment is strongly discouraged, and only advised in patients with a severe discrepancy between medical history and physical examination. Patients receive physical therapy according to the current physical therapy

guideline.(34) However, patients with severe impairments in activities of daily living, suspected passive coping, kinesiophobia and/or fear avoidance beliefs will follow a more intensive physical therapy program.(35) To improve long-term effectiveness of exercise therapy, so called 'booster sessions' will be used.(36) BMI will be determined in patients with suspected overweight. Patients with severe overweight (BMI greater than 30 kg/m²) are referred to dietary therapy or Julius Fit. Julius Fit is a low-care program to guide optimal lifestyle and improve health supervised by fitness instructors. Follow-up takes place within six weeks to two months.

Step 3 – Medical history and physical functions (GP) are examined and secondary care is consulted. The patient sets the interval regarding a follow-up appointment

Appendix 2: Stepped Care Strategy Beating osteoARthritis(22)

| | Step 1 | Step 2 | Step 3 |
|--------------------------------------|---|---|---|
| Diagnostic procedures and assessment | <ul style="list-style-type: none"> - Medical history and physical examination - Assessment function and activity limitations - Setting mutual goals | <ul style="list-style-type: none"> - Radiological assessment ^a - Assessment of pain coping and psychosocial factors - Adjust goals | <ul style="list-style-type: none"> - Consultation orthopedic surgeon - Adjust goals |
| Treatment modalities | <ul style="list-style-type: none"> - Education - Lifestyle advice - Medication ^b <ul style="list-style-type: none"> o Acetaminophen o Glucosamine sulphate | <ul style="list-style-type: none"> - Exercise therapy - Dietary therapy ^c - Medication ^b <ul style="list-style-type: none"> o (Topical) NSAIDs o Tramadol | <ul style="list-style-type: none"> - Multidisciplinary care - TENS - Medication ^b <ul style="list-style-type: none"> o Intra-articular injections |
| Evaluation | After three months ^d | After three – six months ^d | Patient sets interval |

^a If there is a discrepancy between medical history and physical examination

^b Consult guidelines(4, 26) for an adequate dose

^c In case of overweight (Body Mass Index > 25kg/m²)

^d Or earlier, if the symptoms persist or increase

Abbreviations: NSAIDs; Non-Steroidal Anti-Inflammatory Drugs, TENS; Transcutaneous Electrical Nerve Stimulation

Appendix 3: Diagnosis Coding System Allied Healthcare codes

| POSITIE I HOOFD GROEP LICHAAMSLOKALISATIE | POSITIE II SUBGROEP LICHAAMSLOKALISATIE | POSITIE III HOOFD GROEP PATHOLOGIE | POSITIE IV SUBGROEP PATHOLOGIE | POSITIE III HOOFD GROEP PATHOLOGIE | POSITIE IV SUBGROEP PATHOLOGIE |
|--|---|---|---|--|---|
| 1 HOOFD HALS | 0 Achterzijde hoofd 1 Aangezicht 2 Regio buccalis inclusief de kaak 3 Regio cervicalis (oppervlakkige weke delen) 9 Gecombineerd ** | 0 CHIRURGIE BEWEGINGSAPPARAAT | 0 Amputatie 1 Gewrichten, uitgezonderd wervelkolom, meniscoectomie, synovectomie 2 Botten, uitgezonderd wervelkolom 3 Meniscoectomie, synovectomie 4 Pees, spier, ligament 5 Wervelkolom 6 Verwijderde osteosynthese materiaal 8 Postoperatieve contractuur / atrofie 9 Overige chirurgie van het bewegingsapparaat (incl. nieuwvormingen) | 5 LONG AANDOENINGEN | 0 Cara 1 Aangeboren afwijkingen tractus respiratorius 2 Pneumothorax / longoedeem 3 Luchtweginfecties 4 COPD 5 Emfyseem 6 Interstitiële longaandoeningen incl. sarcoïdose |
| 2 THORAX BUIK INWENDIGE ORGANEN | 0 Regio thoracalis anterior (oppervlakkige weke delen) 1 Regio thoracalis dorsalis (oppervlakkige weke delen) 2 Ribben I Sternum 3 Regio abdominalis (oppervlakkige weke delen) 4 Regio lumbalis (oppervlakkige weke delen) 5 Inwendige organen thorax 6 Inwendige organen abdomen 9 Gecombineerd ** | 1 ORTHOPEDISCHE AANDOENINGEN ZONDER CHIRURGIE | 0 Aseptische botnecrose 1 Afwijkingen wervelkolom / bekken 2 Skeletafwijkingen (aangeboren) 3 Ossificatietooms 4 Ontstekingen / nieuwvormingen in het skelet 5 Pseudo-arthrose / epiphyseolysis / apofysitiden 6 Standsafwijkingen extremiteiten 7 Afwijkingen gewrichten, uitgezonderd wervelkolom / bekken 8 Overige orthopedische aandoeningen zonder chirurgie 9 Dupuytren | 6 OVERIGE INTERNE AANDOENINGEN, NIEUWVORMINGEN, CHIRURGIE NIET BEWEGINGSAPPARAAT | 0 Diabetes mellitus 1 Immuniteitsstoornissen 2 Spastisch colon 4 Adipositas 5 Overige-, erfelijke aandoeningen 8 Chirurgie niet bewegingsapparaat (niet cardiochirurgie) 9 Nieuwvormingen zonder chirurgie |
| 3 WERVELKOLOM | 0 Cervicale wervelkolom 1 Cervico-thoracale wervelkolom 2 Thoracale wervelkolom 3 Thoraco-lumbale wervelkolom 4 Lumbale wervelkolom 5 Lumbo-sacrale wervelkolom 6 Sacrum en S.I. gewrichten 7 Coccygis 9 Gecombineerd / totale wervelkolom ** | 2 SURMENAGE DEGENERATIEVE AANDOENINGEN DYSTROFIE | 0 Epicondylitis / tendinitis / tendovaginitis 1 Bursitis (niet traumatisch) / capsulitis 2 Chondropathie / arthropathie / meniscuslaesie 3 Arthrose 4 Osteoporose 5 Syndroom van Costen 6 Spier-, pees- en fascia aandoeningen 7 Discusdegeneratie, coccygodynie / HNP 8 Sudeckse aldystrafie | 7 NEUROLOGISCHE AANDOENINGEN | 0 Perifere zenuwaandoening 1 Cerebellaire aandoeningen / encephalopathieën 2 Cerebrovasculair accident / centrale paresis 3 Multiplex sclerose / ALS / spinale spieratrofie 4 Parkinson / extrapyramidale aandoening 5 HNP met radiculair syndroom 6 Dwaarslaesie (incl. traumatisch en partieel) 7 Neurotrauma 8 Overige neurologische aandoeningen / neuropathieën / ziekten van neurologische oorsprong 9 Psychomotorie retardatie / ontwikkelingsstoornissen |
| 4 SCHOUDER BOVENARM | 0 Art. humeri (inclusief weke delen) 1 Regio clavicularis (incl. aangrenzende gewrichten) 2 Regio scapularis 3 Bovenaarregio 9 Gecombineerd ** | 3 TRAUMATISCHE AANDOENINGEN UITGEZONDERD CHIRURGIE, NEUROTRAUMATA EN DWARSLAESIE | 1 Gewrichtscontusie / -distorsie 2 Luxatie (sub-) 3 Spier-, peesruptuur / haematoom 4 Hydrops / haemarthros / traumatisch oedeem 5 Myositis ossificans / adhaesies / traumatische bursitis 6 Fracturen 7 8 Whiplash injury (nektrauma) 9 Status na brandwonden | 8 SYMPTOMATOLOGIE PSYCHOSOMATIEK UROLOGIE GYNAECOLOGIE | 0 Symptomatologie (nog zonder aanwijsbare pathologie) 1 Psychosomatische aandoeningen 2 Hyperventilatie zonder longpathologie 3 proctologie (anus-eneidarm) 4 MDL (maag-darm-lever) 5 Seksuologie 6 Urine incontinentie, incontinentia urinae 7 Fecale incontinentie, incontinentia aM 8 Urologie 9 Gynaecologie |
| 5 ELLEBOOG ONDERARM HAND | 0 Art. cubiti (inclusief weke delen) 1 Onderarmregio 2 Handwortel / polsgewricht (inclusief weke delen) 3 Middenhandregio (inclusief weke delen) 4 Vingers 5 Duim 9 Gecombineerd ** | 4 HART- VAAT- EN LYMFEVATAANDOENINGEN (INCLUSIEF CARDIOCHIRURGIE) | 0 Hartaandoeningen (niet genoemd onder 41 I'm 49) 1 Myocardinfarct (AMI) 2 Status na coronary artery bypassoperatie (CABG) 3 Status na percutane transluminale coronair angioplastiek (PTCA) 4 Status na hartklepoperatie 5 Status na operatief gecorrigeerde congenitale afwijkingen 6 Lymfevataandoeningen / oedeem 7 Ulcus / decubitus / necrose 8 Algemeen vaatlijden, circulatiestoornissen 9 | 9 REUMATISCHE AANDOENINGEN HUIDAANDOENINGEN | 0 Reumatoïde arthritis, chronische reuma 1 Juveniel reuma 2 (Poly-) arthritis 3 Spondylitis ankylopoetica / ankylose 4 Overige reumatische- en collageenaandoeningen 5 Littleknevelstei 6 Sclerodermie 7 Psoriasis 8 Hyperhidrosis 9 Overige huidaandoeningen |
| 6 BEKKEN BOVENBEEN | 0 Bekkenregio 1 Liesregio 2 Art. coxae (inclusief weke delen) 3 Bovenbeenregio (inclusief weke delen) 4 Bekkenboderegio (incl organen kleine bekken) 9 Gecombineerd ** | 7 KNIE ONDERBEEN VOET | 0 Art. genus (inclusief patella en weke delen) 1 Onderbeenregio 2 Bovenste spronggewricht (inclusief weke delen) 3 Onderste spronggewricht (inclusief weke delen) 4 Voetwortel 5 Middenvoet 6 Voorvoet (tenen) 9 Gecombineerd ** | 8 NIET IN GEBRUIK 9 MEER DAN ÉÉN HOOFD GROEP | 0 Eén lichaamszijde 1 Bovenste lichaamsheft 2 Onderste lichaamsheft 3 Gegeneraliseerd 4 Meer lokalisaties |
| ** Gecombineerd: een combinatie van lichaamslokalisaties binnen een hoofdgroep | | | | | |

Appendix 4: Algofunctional Index hip OA

| Pijn of onbehagen: tijdens nachtelijke bedrust | Score |
|--|--------------|
| <input type="radio"/> Niet of niet significant | 0 |
| <input type="radio"/> Alleen bij bewegen of in een bepaalde houding | 1 |
| <input type="radio"/> In rust | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Pijn of onbehagen: ochtendstijfheid of afnemende pijn na opstaan | |
| <input type="radio"/> 1 minuut of minder | 0 |
| <input type="radio"/> Meer dan 1 maar minder dan 15 minuten | 1 |
| <input type="radio"/> 15 minuten of meer | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| | |
| Pijn of onbehagen: na 30 minuten staan | |
| <input type="radio"/> Niet | 0 |
| <input type="radio"/> Wel | 1 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| | |
| Pijn of onbehagen: met lopen | |
| <input type="radio"/> Niet | 0 |
| <input type="radio"/> alleen na het lopen van enige afstand | 1 |
| <input type="radio"/> snel na starten van het lopen en toenemend na enige tijd lopen | 2 |
| <input type="radio"/> na starten van lopen, niet toenemend | 1 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| | |
| Pijn of onbehagen: na lange tijd zitten (2 uur) | |
| <input type="radio"/> niet | 0 |
| <input type="radio"/> wel | 1 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| | |
| Maximaal te lopen afstand (mag met pijn lopen) | |
| <input type="radio"/> onbeperkt | 0 |
| <input type="radio"/> meer dan 1 km maar beperkt | 1 |
| <input type="radio"/> ongeveer 1 km (in ongeveer 15 min.) | 2 |
| <input type="radio"/> tussen de 500-900 m (in ongeveer 8-15 min.) | 3 |
| <input type="radio"/> tussen de 300-500 m | 4 |
| <input type="radio"/> tussen de 100-300 m | 5 |
| <input type="radio"/> minder dan 100 m | 6 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| | |
| Hulpmiddelen | |

| | |
|---|-----|
| o geen hulpmiddelen | 0 |
| o loopt met 1 stok of kruk | 1 |
| o loopt met twee stokken of krukken | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| Activiteiten in dagelijks leven: sokken aantrekken door voorover te buigen | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| Activiteiten in dagelijks leven: een voorwerp oppakken van de vloer | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| Activiteiten in dagelijks leven: een normale trap op- en aflopen | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| Activiteiten in dagelijks leven: in en uit de auto kunnen stappen | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk, antwoord verplicht in te vullen</i> | |
| Totaal score (max 24) | |

Interpretatie: 1-4: geringe beperkingen, 5-7: matige beperkingen, 8-10: grote beperkingen 11-13: zeer grote beperkingen, ≥14 extreem grote beperkingen.

Bij algo >4 verwijzing fysiotherapeut overwegen.

Appendix 5: Algofunctional Index knee OA

| Pijn of onbehagen: tijdens nachtelijke bedrust | score |
|---|--------------|
| ○ Niet of nauwelijks | 0 |
| ○ Alleen bij bewegen of in een bepaalde houding | 1 |
| ○ In rust | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Pijn of onbehagen: ochtendstijfheid of afnemende pijn na opstaan | |
| ○ 1 minuut of minder | 0 |
| ○ Meer dan 1 maar minder dan 15 minuten | 1 |
| ○ 15 minuten of meer | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Pijn of onbehagen: na 30 minuten staan | |
| ○ Niet | 0 |
| ○ Wel | 1 |
| <i>één antwoord mogelijk</i> | |
| | |
| Pijn of onbehagen: met lopen | |
| ○ Niet | 0 |
| ○ alleen na het lopen van enige afstand | 1 |
| ○ snel na starten van het lopen en toenemend na enige tijd lopen | 2 |
| ○ na starten van lopen, niet toenemend | 1 |
| <i>één antwoord mogelijk</i> | |
| | |
| Pijn of onbehagen: bij opstaan uit stoel, zonder hulp armen | |
| ○ niet | 0 |
| ○ wel | 1 |
| <i>één antwoord mogelijk</i> | |
| | |
| Maximaal te lopen afstand (mag met pijn lopen) | |
| ○ onbeperkt | 0 |
| ○ meer dan 1 km maar beperkt | 1 |
| ○ ongeveer 1 km (in ongeveer 15 min.) | 2 |
| ○ tussen de 500-900 m (in ongeveer 8-15 min.) | 3 |
| ○ tussen de 300-500 m | 4 |
| ○ tussen de 100-300 m | 5 |
| ○ minder dan 100 m | 6 |
| <i>één antwoord mogelijk</i> | |
| | |
| Hulpmiddelen | |

| | |
|--|-----|
| o geen hulpmiddelen | 0 |
| o loopt met 1 stok of kruk | 1 |
| o loopt met twee stokken of krukken | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Activiteiten in dagelijks leven: in staat zijn om trap <u>op</u> te lopen | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Activiteiten in dagelijks leven: in staat om trap <u>af</u> te lopen | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Activiteiten in dagelijks leven: in staat om te hurken/buigen van knieën | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Activiteiten in dagelijks leven: in staat om te lopen op oneffen grond | |
| o zonder problemen | 0 |
| o met enige problemen | 0,5 |
| o met matige problemen | 1 |
| o met veel problemen | 1,5 |
| o niet in staat | 2 |
| <i>één antwoord mogelijk</i> | |
| | |
| Totaal score (max 24) | |

Interpretatie: 1-4: geringe beperkingen, 5-7: matige beperkingen, 8-10: grote beperkingen, 11-13: zeer grote beperkingen, ≥14 extreem grote beperkingen.

Bij algo>4 verwijzing fysiotherapeut overwegen.

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