

Pain coping style and health care use in patients with early knee and/or hip osteoarthritis: 10-year CHECK cohort study

MASTER THESIS

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"ONDERGETEKENDE

Meike Carolien van Scherpenseel

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."

Abstract

Introduction: Osteoarthritis (OA) is one of the most common chronic joint conditions worldwide among older adults. Pain is often the main reason to use health care services. In order to manage pain, people use active or passive pain coping strategies.

Aim: To determine the relationship between pain coping style in an early stage of OA and the course of health care use in patients with early knee and/or hip OA, with a 10-year follow-up.

Methods: Baseline and 10-year follow-up data of 861 Dutch participants with early knee and/or hip OA from the multicenter Cohort Hip and Cohort Knee (CHECK) cohort were used. Health care use (HCU) was measured annually with a self-administered questionnaire, indicating how many health care services were used (range 0-20). Pain coping style (active or passive) was measured at baseline using the Pain Coping Inventory (PCI). Descriptive statistics were used to examine baseline characteristics and the course of mean HCU over ten years. Poisson Generalized Estimating Equations (GEE) was performed to determine the relationship between pain coping style and HCU over ten years.

Results: At baseline, the majority of the participants had an active coping style (73.7%). Over ten years, the mean of used health care services in participants with an active coping style ranged from 1.15 (\pm 1.07) to 1.42 (\pm 1.19), and in participants with a passive coping style from 0.96 (\pm 0.98) to 1.34 (\pm 1.16). Analysis showed that having an active pain coping style was significantly ($p < 0.001$) associated with an increase of 22.5% (95% CI, 9.3-37.3) in the number of used health care services over ten years.

Conclusion: This study showed that having an active pain coping style in an early stage of knee and/or hip OA leads to the use of more health care services over ten years, as opposed to having a passive pain coping style. Consequently, actions must be taken by health care professionals in order to prevent high long-term use of health care services in patients with an active coping style.

Keywords: Osteoarthritis, health care utilization, coping skills, CHECK

Introduction

Osteoarthritis (OA) is one of the most common chronic joint conditions worldwide among older adults^{1,2}. Based on radiographic and symptomatic diagnosis in people of 55 years and older, 15 to 25% are affected with knee OA³ and hip OA is estimated to be present in 5 to 15%⁴. The prevalence is expected to increase as a result of growing presence of OA-related risk factors worldwide, such as higher age, obesity and a sedentary lifestyle^{5,6}.

People with knee and hip OA experience pain, physical disability and stiffness⁷. Pain is often the key symptom in the decision to seek medical help¹. Numerous studies have shown that patients with OA use more health care services than patients without OA^{5,8-12}. Recent research on health care use (HCU) reported that patients with OA had four times the total medical costs compared to matched controls without OA⁵. The most frequently used health care services in patients with early knee and/or hip OA are contact with a general practitioner, other health professionals (e.g. physical, occupational therapist) and use of analgesics¹³. Other treatment modalities for which patients are referred to secondary care, such as contact with a rheumatologist or undertaking surgical procedures, are used less often¹³. Various studies have shown that treatment of OA in both primary and secondary care lead to a reduction in pain and limitations in daily functioning^{14,15}. In some patients, treatment may also cause a change in the way they cope with their pain symptoms due to OA^{14,16}. Many different coping strategies have been identified, which describe how people deal with chronic pain¹⁷.

Pain coping strategies are cognitive and behavioral reactions to chronic pain to manage the pain¹⁸⁻²⁰. In patients with chronic diseases like OA, pain coping strategies are commonly categorized as active or passive²¹. People with an active, also called adaptive, coping style aim to self-manage the pain or attempt to function despite of the pain^{21,22}. This has shown to lead to a more functional lifestyle and less pain²³⁻²⁵. People with a passive, also called maladaptive, coping style tend to avoid the pain or relinquish the control of their pain to others²¹. This is associated with higher levels of pain, greater functional disability and a reduction in quality of life^{17-19,21,23,25,26}. Individuals with chronic diseases are prone to use one type of coping over another^{17,19,27}. However, between patients, it differs significantly which coping style one uses since it is influenced by many factors, such as pain intensity, illness experience, depression, attitude towards disease and trust in medical help^{18,28}.

Based on the results of a longitudinal study, it can be concluded that having an active pain coping style in an early stage of the disease is a significant predictor of high HCU at two years in patients with early knee and/or hip OA¹³. These results are surprising. Since having a passive pain coping style is known to lead to higher levels of pain, it may be assumed that one would seek for medical help more frequently. Other researchers suggested that these results may be due to the patients' intention to step out of the role of 'passive sufferer' and become a more active, self-actualizing individual by seeking help²⁸. Since OA is a chronic, irreversible disease which leads to an experience of long-lasting pain for multiple years, it is interesting to examine the relationship between pain coping style and HCU for a longer time-period than two years. Also, with an increasing prevalence of chronic diseases, such as OA, and additional rising health care expenditures in the upcoming years, extra attention is needed for research in the field of health care use.

Aim

The aim of this study was to determine the relationship between pain coping style in an early stage of OA and the course of health care use in patients with early knee and/or hip OA, with a 10-year follow-up using data from the Cohort Hip & Cohort Knee (CHECK) cohort.

Method

Design

To determine the relationship between pain coping style and HCU on the long-term, baseline and annually measured data for ten years from the CHECK cohort were used²⁹. CHECK was a prospective longitudinal multicenter cohort study with 1002 participants with early symptomatic knee and/or hip OA in The Netherlands. The CHECK cohort was approved by the medical ethics committees of all participating centres, and all participants gave their written informed consent.

Setting and study population

Participants throughout The Netherlands were included in the CHECK cohort through convenience sampling. Inclusion criteria included: (1) having pain of the knee and/or hip; (2) age between 45 and 65 years and (3) being at or within 6 months of first contact with the general practitioner for symptoms. Participants were excluded if they met any of the following exclusion criteria: (1) knee and/or hip pain was based on any other pathological condition that could explain the symptoms; (2) comorbidity precluding physical evaluation and/or follow-up of at least ten years; (3) malignancy in the past 5 years and (4) inability to understand the Dutch language. In the CHECK cohort, two groups were formed: participants with mild symptoms and severe symptoms. For the current study, only participants with severe symptoms were included, because they fulfilled the clinical American College of Rheumatology (ACR) criteria for classification of knee and/or hip OA^{30,31}.

Participants who visited their general practitioner and potentially met the inclusion criteria, were sent to one of the ten participating general and university hospitals (Appendix 1). Final eligibility was determined by a physician at the hospitals. Participants were followed for a total period of ten years, starting between 2002 and 2005. Participants visited the centers annually. Study visits consisted of structured interviews, self-reported questionnaires, physical examinations, X-rays, blood and urine collection²⁹. Data of a selection of self-reported questionnaires were used for the current study.

Measurement instruments

Main study parameters

HCU was measured using a combined version of a self-reported questionnaire, which was based on a form developed for the Patient Panel Chronic Diseases by Nivel (The Netherlands Institute for Health Services Research)³² and the questionnaire Economic Aspects in Rheumatoid Arthritis³³. In the HCU-questionnaire, all available OA-related health care services were included (range 0-20) (Appendix 2). For example, contact with the general

practitioner (GP), medical specialists, social worker or use of nonsteroidal anti-inflammatory drugs (NSAID's). At each study visit, participants reported whether or not (yes/no) they had used the health care service(s) in the past three months. For use of medication, the participant indicated whether or not they were using this (yes/no) at the moment. The participants did not need to specify how many times they had used the service(s). Per participant, this ultimately led to a range of 0 to 20 used health care service(s). Score 0 represents "no usage of health care services" and score 20 represents "usage of all health care services".

Pain coping was identified with the Pain Coping Inventory (PCI) (Appendix 3). The PCI is a self-reporting questionnaire with a dichotomous outcome: it determines if a person has an active or passive coping style. The PCI has 33 items, divided over six subscales. The active coping subscales were defined as the following three active strategies: pain transformation, distraction, reducing demands; passive coping subscales as the three passive strategies: retreating, worrying, resting²⁰. To interpret the score, the points given on the three active and passive subscales were summed up and divided by the maximum points of the active and passive subscale, respectively. This led to a percentage. The subscale with the largest percentage determined which pain coping style was applied the most by the individual²⁰. Subsequently, it was decided if a participant used an active or passive coping style, respectively, at baseline.

Other study parameters

The following patient characteristics were administered at baseline: age, gender, body mass index (BMI), education level, employment, comorbidities (range 0-4), location of OA²⁹. Patient reported outcomes were measured using self-reporting questionnaires. Pain intensity was measured with the Numeric Rating Scale (NRS); an 11-point unidimensional pain rating scale (0-10)³⁴. Score 0 represents "no pain" and score 10 "worst pain imaginable". The Western Ontario McMaster University Osteoarthritis Index (WOMAC) was used to evaluate condition specific health status^{35,36}. WOMAC assesses three dimensions: pain (0-20), functioning (0-68) and stiffness (0-8). Lower scores indicate lower levels of pain, functional disability and stiffness, respectively. Self-reported health related quality of life was measured with the Short Form (SF-)36³⁷. The questionnaire has a score range of 0 to 100, with higher scores indicating a better health related quality of life. An overview of all measures which were included in the CHECK cohort, see *Wesseling et al (2016)*²⁹.

Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics®, version 25.0. The data were checked on data-entry errors, outliers and missing data. To indicate whether values were missing at random (MAR), significant differences for baseline characteristics between participants with and without missing values were tested using independent T- tests for continuous and chi-squared tests for categorical values. If significantly different, imputation was conducted to reduce bias³⁸. A total of 10 different multiply imputed datasets were

generated. Ultimately, the multiple sets of parameter estimates were pooled using Rubin's rules of combination^{39,40}. Sensitivity analysis was conducted to examine the assumptions of the missing data⁴¹. Descriptive statistics were used to analyse baseline characteristics of the multiple imputed data. The mean of used health care services among participants with an active and passive coping style, respectively, was calculated using descriptive statistics. In order to gain more insight in which health care services were used at each time point, five subgroups from all twenty health care services were distinguished by the research team (MS, CK, MP). The classification of the subgroups was based on the Stepped Care Strategy, to take into account the stepwise progression in advanced treatment modalities in the management of knee and/or hip OA^{14,42}: 1) selfcare: i.e. use of paracetamol, family/ household help; 2) NSAID's: i.e. use of diclofenac, naproxen; 3) primary care: i.e. contact with a general practitioner, physiotherapist; 4) secondary care: i.e. contact with an orthopedist, rheumatologist ; 5) work-related care: i.e. company doctor, contact with the institute employee insurance (Appendix 4).

To determine the relationship between pain coping style in an early stage of OA and the course of the annually measured number of used health care services over ten years, longitudinal analysis was performed. In order to estimate the average relationship over the entire population, General Estimating Equations (GEE) analysis was used. Since pain coping style was a dichotomous variable, PCI at baseline was dummy coded. Based on literature, the null hypotheses was that having an active coping style, as opposed to having a passive coping style, leads to more health care use over time¹³. Consequently, passive coping style was coded as "0" and active coping style as "1". Since HCU was a count variable, it followed a Poisson distribution and therefore a Poisson GEE analysis was performed^{38,43}. GEE takes into account the dependency of individual observations by specifying a working correlation structure³⁸. Literature has shown that both HCU and pain coping style may change over time^{13,17,44,45}, and therefore it is expected that the correlations between pain coping style and HCU differ at each time point. Hence, an unstructured correlation structure was chosen. Furthermore, various literature has shown that several parameters may be confounders of the relation between pain coping and HCU in patients with chronic conditions^{10,18,26,46-48}. Eventually, the relationship between PCI and HCU was adjusted for confounders. Significance of all tests was defined at the level of $p \leq 0.05$.

Results

Of the 1002 participants included in the CHECK cohort, 861 met the inclusion criteria for the current study. A total of 121 participants dropped out during the study. Of all values, 9.1% were missing and tests showed that the values were at least missing at random. Participants with missing values were significantly more often woman ($p < 0.041$), had a higher score on the WOMAC subscale pain and physical functioning ($p = 0.047$ and $p = 0.004$, respectively) and had more frequently a passive pain coping style ($p < 0.008$) than participants without missing values. Therefore, imputation was performed.

Baseline characteristics of the study population are presented in Table 1. The majority of the participants had knee and hip OA (47.5%), one or more comorbidity (73.9%) and an active coping style (73.7%). For a more detailed description of the total population of the CHECK cohort, see *Wesseling et al (2016)*²⁹.

Table 1. Baseline characteristics of the study population.*

Characteristics at baseline	All participants
Number	861
Age, mean (SD)	56.0 (5.2)
Sex, female	81.1%
BMI, median (IQR)	26.0 (24.0–28.0)
Location OA	
Hip	15.3%
Knee	37.2%
Knee and hip	47.5%
Comorbidities	
0	26.1%
1	30.2%
2	21.3%
3	12.7%
≥4	9.7%
Married/partnership, yes	82.9%
Education level	
No/ primary school	20.1%
Secondary (vocational) education	46.8%
Higher education/ university	33.1%
Employed, yes	40.1%
Pain intensity (0-10), mean (SD)	
Right now	3.2 (2.1)
Past week	3.7 (2.1)
WOMAC subscales standardized (0-100), median (IQR)	
Pain	25 (15–35)
Stiffness	37.5 (25–50)
Function	22.1 (11.8–35.3)
Pain coping style	
Active	73.7%
Passive	26.3%

*Data based on the multiple imputed dataset.

Abbreviations: SD = standard deviation; BMI = body mass index; IQR = inter quartile range; WOMAC = Western Ontario McMaster's University Osteoarthritis Index.

Course of health care use

Over ten years, the mean of used health care services (range 0-20) in participants with an active coping style ranged from 1.15 (\pm 1.07) to 1.42 (\pm 1.19), and in participants with a passive coping style from 0.96 (\pm 0.98) to 1.34 (\pm 1.16). Figure 1 and Figure 2 present the change in the mean number of used health care services for each of the five subgroups over ten years in patients with early knee and/or hip OA with an active and passive coping style, respectively. The mean number of used health care services was the highest in the subgroup 'primary care' in all participants.

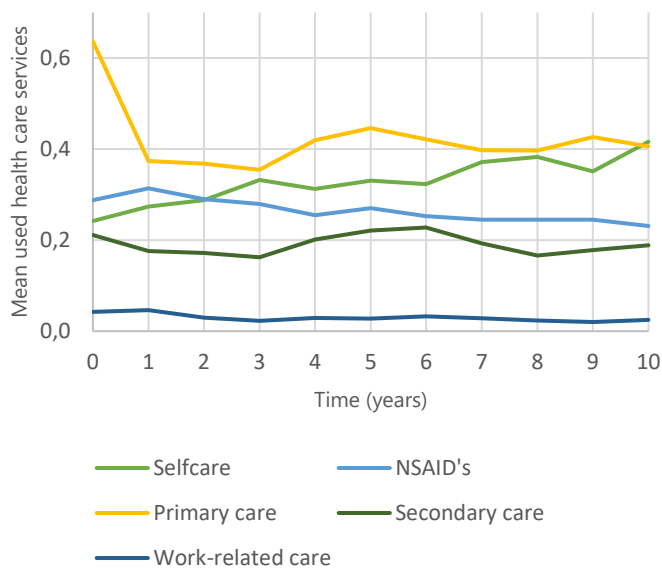


Figure 1. Course of mean used health care services over ten years in patients with early knee and/or hip OA with an active coping style (n=635).

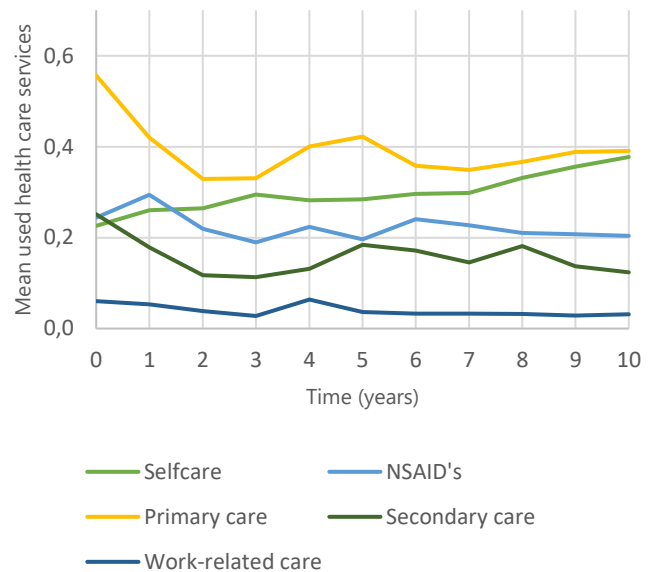


Figure 2. Course of mean used health care services over ten years in patients with early knee and/or hip OA with a passive coping style (n=226).

Relationship pain coping style and health care use

Analysis on possible confounders showed that the following variables interfered the relationship between pain coping style and the course of the number of used health care services over ten years: age, BMI, comorbidities, location of OA, WOMAC subscales pain and functioning and all subscales of the SF-36. The results of the Poisson GEE analysis on the relationship between pain coping style in an early stage of OA and the course of the number of used health care services over ten years in patients with early knee and/or hip OA, adjusted for confounders, are shown in Table 2. Having an active pain coping style is statistically significantly ($p < 0.0001$) associated with an increase of 22.5% (95% CI, 9.3-37.3) in the number of used health care services over a time period of ten years. Sensitivity analysis showed no remarkable differences between imputed data and original data.

Table 2. Relationship pain coping and the number of used health care services over ten years in patients with early knee and/or hip OA.*

Parameters	Number of used health care services		
	B [95%CI]	IRR [95% CI]	p
Pain coping style (passive = 0; active = 1)	0.203 [0.089; 0.317]	1.225 [1.093; 1.373]	<0.0001

Abbreviations: B = beta (regression coefficient); 95%CI = 95% confidence interval; IRR = incidence rate ratio

* Adjusted for confounders

Discussion

The aim of this study was to examine the relationship between pain coping style in an early stage of OA and the course of health care use over a time period of ten years in patients with early knee and/or hip OA. Results showed that having an active pain coping style leads to the use of more health care services over ten years, compared to having a passive pain coping style. At baseline, the majority of the participants had an active coping style. The difference in the mean of used health care services between patients with an active and passive coping style was approximately 20%. Furthermore, health care services in primary care were used the most among all participants, regardless of coping style.

To our knowledge, no prior studies examined the relationship between pain coping style and HCU in patients with any chronic musculoskeletal conditions, over a time-period of ten years. Hoogeboom et al.¹³ studied which factors predict high HCU in patients with early knee and/or hip OA at two years. This study found that an active coping style was a predictive factor of high HCU, which is comparable with results found in this study. A strength of this study is that we used a ten year follow-up. Such a long follow-up is interesting, since OA is a chronic and incurable condition characterized by long-lasting pain.

From a societal perspective, this study highlights the importance of awareness among health care professionals on the relationship between coping and HCU in patients with OA. Although results in the current study showed that there was only a slightly higher amount of used health care services among patients with an active coping style of approximately 20%, over a long time-period this may still lead to a tremendous amount of health care costs. In 2015, 21.1% of all health care costs in The Netherlands were attributed to the care of OA⁴⁹. This is expected to increase enormously in the upcoming years, simultaneously with the growing prevalence of OA^{2,50}.

Besides, the results in this study showed that the majority of participants had an active coping style at baseline. Having an active coping style is in line with the recommendations of current guidelines, since it improves the patients' health status¹⁴. We now know that this may lead to high use of health care services and additional costs. The large amount of active copers in combination with the higher mean of used health care services among patients with an active coping style, supports the great importance to prevent high use of health care services among this group. Moreover, we found that primary care services were used the most of all health care services. Patients may prefer health care use in primary care as opposed to -less expensive-

pharmacological interventions, as it enables individuals to play an active role in coping with pain. Health care providers, in particular in primary care, could react to this by teaching their patients self-management tools. Greater self-management targeting self-control has shown to be effective in preventing high health care use in patients with chronic conditions⁵¹⁻⁵⁶, especially in those with an active coping style²³. Hence, it is important to train active coping skills in combination with educating self-management tools in early stages of the disease. Consequently, patients are able to handle their condition from the beginning, with minimum help from health care services.

Strengths of this study include the large sample size of the CHECK cohort and the participation of ten different general and university hospitals throughout The Netherlands, which generated rich and widely represented data. Also, there was only a small amount of missing data. Multiple imputation and sensitivity analysis were used to reduce bias. Furthermore, the data was gathered over a long period of time, which is suitable for the long-lasting condition of OA and has resulted in the opportunity to find patterns in HCU that occurred over the time period.

There are also some limitations to this study. First, the HCU-questionnaire only determined whether or not participants used prespecified health care services, and not how many times they used the services. More explicitly, we were not able to determine if a participant, for example, consulted a general practitioner one time or multiple times. However, this would lead to great differences in health care costs. Second, participants only had to indicate whether or not they used health care services in the past three months, which may have led to recall bias. Also, no data on HCU is known of the remaining months for each individual. To be able to achieve a more accurate representation of HCU throughout the years, we advise future longitudinal studies to collect data on HCU over the entire twelve-month period. Additionally, self-reported health care use in patients with OA is often underreported, providing no accurate information⁵⁷. For future cohort studies we recommend to measure HCU over the entire period and to include the volume as well. To achieve an accurate and unbiased representation of HCU, retrospective cost-dairies⁵⁸ in combination with patients' medical files^{9,42,59} or administrative data bases of healthcare insurances can be used^{5,60}. At last, the content of treatments in the current study are unknown. Therefore it was impossible to identify if health care providers focused on coping skills or self-management. Since this may influence the use of health care services, future research in health care use in this population should take content of treatments into account.

Conclusion

In conclusion, results of this study show that patients with knee and/or hip OA with an active coping style, as opposed to those with a passive coping style, use significantly more health care services over a time-period of ten years. Consequently, actions must be taken by health care providers in order to prevent high long-term use of health care services in patients with an active coping style.

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Appendices

Appendix 1: Involved university and general hospitals in the CHECK cohort

Involved in the cohort are the Erasmus Medical Center Rotterdam; Kennemer Gasthuis Haarlem; Leiden University Medical Center; Maastricht University Medical Center; Martini Hospital Groningen/Allied Health Care Center for Rheumatology and Rehabilitation Groningen; Medical Spectrum Twente Enschede/Ziekenhuisgroep Twente Almelo; Reade, formerly Jan van Breemen Institute/VU Medical Center Amsterdam; Sint Maartenskliniek Nijmegen; University Medical Center Utrecht and Wilhelmina Hospital Assen.

Appendix 2: Questionnaire HCU

With which of the following caregivers have you had contact during the last three months with regard to your hip or knee complaints? (multiple answers possible)

0= no

1= yes

- Family doctor
- Nurse / home care
- Family / household help
- Physiotherapist
- Occupational therapist
- Oefentherapeut Cesar / Mensendieck¹
- Social work
- Psychologist
- Rehabilitation doctor
- Rheumatologist
- Orthopedist
- Other specialist
- Company doctor / Human Resources
- GMD / Gak / CWI / ABP / USZO (UWV)²
- Pastor / Priest / other spiritual leader
- Other caregivers

What medications are you using at this time for your complaints of hip and / or knee?

0= no

1= yes

- Paracetamol
- Aspirin
- Ibuprofen, diclofenac (Voltaren), naproxine (Naproxen), celecoxib (Celebrex), refecobix (Vioxx)
- Other drugs

¹ In the Netherlands and Scandinavian countries, "oefentherapie Cesar/ Mensendieck" is a profession in primary care which is similar to physiotherapy. Treatment is especially based on improving body posture and movement.

² Dutch institutes which give counseling according to incapacity of work and other labor-related business.

Appendix 3: Pain coping inventory

PAIN COPING INVENTORY (PCI)

1996 © F.W. Kraaimaat and A.W.M. Evers

Name : Sex : Male/Female
Date of birth : Present date :
Achieved level of education :
Do you use pain medication : Yes/No

Instruction:

People who suffer from pain develop various ways to manage this pain. On the next pages are a number of statements about what you do or think when you are in pain. We ask you to indicate how often you act or think as described. You do this by circling one of the possible answers behind the statement.

Below you find an example of the manner in which you can reply to the statements.

EXAMPLE

If you sometimes take a bath or shower when you are in pain you circle the number 2:

	hardly ever	some- times	often	very often
I take a bath or shower	1	2	3	4

Take your time when you work from one statement to the next. There are no right or wrong answers: it is rather your opinion that matters. It goes without saying that not all statements will apply to you. Please complete the following inventory.

	hardly ever	some- times	often	very often
1. I quit my activities.	1	2	3	4
2. I continue my activities, but with less effort.	1	2	3	4
3. I continue my activities, but in a slower pace.	1	2	3	4
4. I continue my activities, but less precise.	1	2	3	4
5. I confine myself to simple activities.	1	2	3	4
6. I take care that I don't have to exert myself physically.	1	2	3	4
7. I take rest by sitting or lying down.	1	2	3	4
8. I take on a comfortable bodily posture.	1	2	3	4
9. I take a bath or shower.	1	2	3	4
10. I take care that I don't get upset.	1	2	3	4
11. I retreat in a restful environment.	1	2	3	4
12. I take care that I am not bothered by annoying sounds.	1	2	3	4
13. I take care that I am not bothered by the light (e.g. by putting on sunglasses, closing the curtains).	1	2	3	4
14. I take care of what I eat or drink.	1	2	3	4
15. I pretend the pain is not present.	1	2	3	4
16. I pretend the pain does not concern my body.	1	2	3	4
17. I focus on the pain all the time.	1	2	3	4
18. I imagine the pain less violent than it really is.	1	2	3	4
19. I think of pleasant things or events.	1	2	3	4

	hardly ever	some- times	often	very often
20. I distract myself by undertaking a physical activity (e.g. walking, cycling or swimming).	1	2	3	4
21. I distract myself by reading, listening to music, watching a tv-programme or something like it.	1	2	3	4
22. I do something I find pleasant.	1	2	3	4
23. I self-administer other physical stimuli (e.g. by clenching my fists, by pinching myself, by pressing or rubbing on the site of the pain).	1	2	3	4
24. I think of all things that remain undone because I am in pain.	1	2	3	4
25. I start worrying.	1	2	3	4
26. I wonder about the cause of the pain.	1	2	3	4
27. I think that the pain will worsen.	1	2	3	4
28. I think of moments when I was not in pain.	1	2	3	4
29. I think I go mad with pain.	1	2	3	4
30. I remember other people's difficulties.	1	2	3	4
31. I think that others do not understand what it is to be in such pain.	1	2	3	4
32. I separate myself.	1	2	3	4
33. When I am outdoors I try to return home as soon as possible.	1	2	3	4
34. a. I have a way of my own to lessen the pain or make it more bearable.	1	2	3	4
b. Which way:				
.....				

Appendix 4: Subgroups of health care use

Subgroup	Health care service based on the HCU-questionnaire
Selfcare	Asperin Family/ householdhelp Paracetamol Pastor/ priest/ spiritual leader
NSAID's	Ibuprofen, diclofenac (Voltaren), naproxine (Naproxen), celecoxib (Celebrex), refecobix (Vioxx) Other drugs
Primary care	Family doctor Physiotherapist Psychologist Oefentherapeut Cesar/ Mensdendieck Occupational therapist Social work Other caregivers
Secondary care	Nurse/ home care Rehabilitation doctor Rheumatologist Orthopedist Other specialist
Work-related care	Company doctor/ Human Recourses GMD / Gak / CWI / ABP / USZO (UWV)

Abbreviations: NSAID = nonsteroidal anti-inflammatory drugs; CWI = center for work and income; ABP = national civil pension fund; USZO (UWV) = institute employee insurance.