

# Role of rheumatology clinical nurse specialists in optimizing management of hand osteoarthritis during daily practice in secondary care: an observational study

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**Background:** The purpose of this study was to describe the effectiveness of a single one-hour consultation by a clinical nurse specialist in patients with hand osteoarthritis during daily rheumatology practice in secondary care.

**Methods:** Consecutive patients diagnosed by rheumatologists to have primary hand osteoarthritis and referred to the clinical nurse specialist were eligible for entry into this study. The standardized 1-hour consultation consisted of assessments and education on hand osteoarthritis by a clinical nurse specialist. Before and 3 months after the consultation, assessments were done to evaluate treatment (use of assistive devices, acetaminophen), health-related quality of life (physical component summary [PCS] score of Short-Form 36), and hand pain/function (Australian/Canadian Osteoarthritis Hand Index [AUSCAN]). Paired *t*-tests and McNemar tests were used to analyze differences between baseline and follow-up. Satisfaction was measured after consultation at follow-up using a multidimensional questionnaire comprising 13 items (rated on a four-point scale).

**Results:** A total of 439 patients were referred, with follow-up data available for 195 patients, comprising 177 (87%) females, and of mean age  $59 \pm 9.0$  years. After consultation, the proportions of patients using assistive devices and/or acetaminophen increased significantly from 30% to 39% and from 35% to 49%, respectively. PCS improved significantly ( $P = 0.03$ ) whereas AUSCAN hand pain/function showed no significant differences compared with baseline ( $P$  values 0.52 and 0.92, respectively). The proportions of patients reporting to be satisfied or fully satisfied ranged from 78% to 99% per item.

**Conclusion:** A single, comprehensive, standardized assessment and education by a clinical nurse specialist improved the physical dimension of health-related quality of life in hand osteoarthritis. Most patients were satisfied with the consultation. Further controlled trials are needed to determine the added value of the clinical nurse specialist in care for hand osteoarthritis.

**Keywords:** hand osteoarthritis, nursing, quality of life, satisfaction

## Introduction

Hand osteoarthritis is a common musculoskeletal disorder and considered to be a mild disease.<sup>1</sup> However, the clinical burden in secondary care is high, as reflected by considerable pain, decreased grip force and joint mobility, and impaired functional ability experienced by patients.<sup>2,3</sup> Health-related quality of life is lowered compared with normal controls<sup>2</sup> and is similar to patients with rheumatoid arthritis, as is pain and disability.<sup>3</sup> The costs due to hand osteoarthritis are expected to rise due to the ageing of the population in the coming decades, together with a higher burden to

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the working community caused by associated mobility, disability, and occupational problems.<sup>4,5</sup> Despite the great impact on society, no cure is available for hand osteoarthritis. However, patients can be offered medication, such as analgesics, or various nonpharmacological interventions which have been found to be effective, including education on the condition and treatment options, splints, assistive devices, and exercise programs.<sup>6-9</sup> In daily clinical practice, delivery of nonpharmacological care in osteoarthritis has been found to be suboptimal in many patients.<sup>10,11</sup> A considerable proportion of patients with hand osteoarthritis are referred to a rheumatologist if treatment advice provided by primary care is not sufficiently effective<sup>12,13</sup> and/or if there is doubt about the (inflammatory) origin of their hand complaints.

This specific group of secondary care patients with hand osteoarthritis, who are seeking help for their considerable pain and disability burden, may be referred to specific multidisciplinary rehabilitation programs, requiring several visits to the hospital over several weeks. These programs have been found to be effective, but are time-consuming and expensive.<sup>7,14</sup> In these cases, referral to a clinical nurse specialist could be considered, especially if this was an easy and cost-effective way to achieve comprehensive and patient-friendly management of hand osteoarthritis.

Clinical nurse specialists are increasingly used in rheumatology, and their role continues to develop. They are undertaking activities such as examining the musculoskeletal system, formulating and carrying out a plan of disease management, assessing disease status, managing symptoms, recommending changes in drug treatment, making referrals to other health professionals, addressing physical, psychological, and social problems, and assessing knowledge deficits.<sup>15</sup> In rheumatoid arthritis, care delivered by clinical nurse specialists has a similar long-term clinical outcome to that of an inpatient or day patient multidisciplinary team care program, at significantly lower cost.<sup>16-18</sup>

All of these observations underscore the need to examine further the role of the rheumatology clinical nurse specialist in the care of patients with hand osteoarthritis. Until the present, studies on the value of short-term care by clinical nurse specialists in secondary care patients with hand osteoarthritis are not yet available. This proof-of-concept study, as part of standard usual care in a hospital setting in daily practice, explored changes in health-related quality of life, pain, and daily activities of patients with hand osteoarthritis 3 months after consultation and education by a clinical nurse specialist and their determinants, to what extent patients followed

advice given by the clinical nurse specialist and their satisfaction with this form of care. Moreover, we studied to what extent patients who completed the intervention differed from those who did not.

## Patients and methods

### Patient population

This study was conducted at the outpatient clinic of the Department of Rheumatology at Leiden University Medical Center, The Netherlands, from August 2005 until April 2009. All patients diagnosed by a rheumatologist to have primary hand osteoarthritis were offered a referral to the clinical nurse specialist as a part of standard usual care for osteoarthritis patients, and were consecutively included in the study. All clinical diagnoses of primary hand osteoarthritis made by the rheumatologist were verified by the principal investigator (WK) based on reviewing the medical chart. Patients with inflammatory rheumatic diseases were excluded. The consultation provided by the clinical nurse specialist was part of standard usual care and was conducted in compliance with the Good Clinical Practices protocol and Declaration of Helsinki principles. In accordance with Dutch law, formal approval from an ethical committee was not required for this project. Patients gave their consent to participate after being informed verbally about the study protocol.

### Consultation by clinical nurse specialist

The nurse consultation was developed and based on existing Dutch and international guidelines for management of knee and hip osteoarthritis.<sup>12,13,19</sup> Specific guidelines for the management of hand osteoarthritis were not available at the start of the study. The consultation by the clinical nurse specialist consisted of education on hand osteoarthritis, its treatment, and lifestyle advice (joint protection, exercises, use of assistive devices) tailored to the individual patient's problems and needs. Advices on use of acetaminophen (first choice of analgesic in osteoarthritis) and nonsteroidal anti-inflammatory drugs (NSAIDs) on demand were given. Furthermore, written information (brochures and an extensive booklet about osteoarthritis in general with its therapeutic options) was given.<sup>20</sup> If patients had complaints related to osteoarthritis in other joint sites besides the hand (eg, knee or hip), information and education about treatment and lifestyle advice was also given for these joint sites. Telephone follow-up was scheduled after a minimum of 12 weeks and a maximum of 20 weeks after the first visit. During this telephone consultation, patients

were asked if and to what extent they had followed the advice of the clinical nurse specialist. If needed, additional support to implement advice and/or make referrals to a physical therapist, occupational therapist, or other health care providers was provided in consultation with the rheumatologist. The clinical nurse specialist consultation was provided by four trained rheumatology clinical nurse specialists with ample experience in the management of patients with rheumatic disease.

## Assessments

Patients filled in standardized questionnaires about demographic characteristics, use of medication, and nonpharmacological treatment regarding their hand function problems, health-related quality of life, and self-reported pain and function before the visit with the clinical nurse specialist and after 3 months (following the telephone consultation), partly structured by the International Classification of Functioning, Disability and Health core sets for osteoarthritis.<sup>21</sup> Sociodemographic and clinical data (eg, age, height, weight, education level, paid employment, marital status, smoking status) were collected. In addition, the highest education level was recorded (lower education, no formal education; primary school or lower vocational education; higher education, university or higher vocational education). Current medication (eg, acetaminophen, NSAIDs) and nonpharmacological treatment (use of helping aids/devices, eg, splints or adaptations in forks, knives, and spoons) in hand osteoarthritis was also collected. Information about the use of physical therapy in general was sought as well. After the telephone consultation, patients were asked to fill in the questionnaire and a patient satisfaction questionnaire. The mean follow-up time was based on the dates of the follow-up assessments.

## Health-related quality of life

Health-related quality of life was measured by the Short-Form 36, which has been translated and validated in the Dutch language.<sup>22</sup> This is a widely used generic health questionnaire with 36 questions, of which eight subscales can be formed, ie, physical function (ten questions), role limitations due to physical health problems (four questions), bodily pain (two questions), general health (five questions), vitality/energy (four questions), social functioning (two questions), role limitations due to emotional problems (three questions), and mental health (five questions). In the original scoring, scores range from 0 to 100, where a low score represents worse health status.

From these subscales, summary component scores for physical health (PCS) and mental health (MCS) can be calculated. Because each subscale has a different minimum-maximum score, norm-based scoring was introduced. In norm-based scoring, each scale is scored to have the same average (mean: 50) and the same standard deviation (SD: 10), meaning each point equals one-tenth of a standard deviation.<sup>23</sup> The main advantage of norm-based scoring is the simplified interpretation. In this study, scores for the general Dutch population were used to standardize our scores in order to apply the norm-based scoring.<sup>22</sup> Scores of both subscales and summary scales were calculated.

## Self-reported pain and function in hands

Self-reported pain, stiffness, and function in patients suffering from hand osteoarthritis were measured with a disease-specific questionnaire, ie, the Australian/Canadian Osteoarthritis Hand Index (AUSCAN) Likert scale 3.1, which is reliable and validated in patients with symptomatic hand osteoarthritis.<sup>24</sup> It contains five items for pain, one for stiffness, and nine for physical functioning using a 48-hour time frame. Each item is scored from 0 (none) to 4 (extreme). Higher scores indicate worse pain, stiffness, and more functional limitations. Scores for AUSCAN subscales have different ranges (pain subscale 0–20, stiffness subscale 0–4, function subscale 0–36, total score 0–60).

## Patient satisfaction questionnaire

The design of the questionnaire was extracted from a multidimensional patient satisfaction questionnaire, based on a questionnaire that has been developed to evaluate the satisfaction with multidisciplinary care in rheumatoid arthritis patients.<sup>25</sup> The items and domains of the satisfaction questionnaire have been validated in patients with rheumatoid arthritis with good internal consistency.<sup>18</sup> The questionnaire in the present study comprised four domains with 13 statements on the clinical nurse specialist's knowledge (two items), provision of information (five items), empathy (two items), and overall usefulness of the intervention (four items). Patients were asked whether they agreed or disagreed with the statements using a five-point Likert scale (0 = totally disagree, 1 = disagree, 2 = disagree/agree, 3 = agree, 4 = totally agree). Reliability analysis of the satisfaction questionnaire in the present study showed that Cronbach's alpha was 0.94 for the total questionnaire and 0.83, 0.88, 0.81, and 0.82 for the domains of knowledge, information, empathy, and usefulness, respectively.

## Statistical analysis

Data were analyzed using SPSS (v 17; SPSS Inc, Chicago, IL). Comparisons were made of demographic data of patients having hand osteoarthritis with and without available follow-up data after 3 months (after telephone consultation). Independent *t*-tests were used for continuous variables and Chi-squared tests for proportions.

A paired *t*-test was performed to analyze differences in AUSCAN pain, function, PCS, and MCS between baseline and follow-up. The McNemar test was used to analyze changes with respect to the usage of helping aids, use of acetaminophen, use of NSAIDs, and physical therapy between baseline and after the telephone consultation.

Probability plots were made for the difference of Short Form-36 PCS and AUSCAN pain and function between baseline and follow-up to investigate how many patients improved or deteriorated after 3 months. The cutoff levels for improvement were based on the Short Form-36 manual and minimal clinically important improvement for AUSCAN pain and function,<sup>23,26</sup> which was  $>5$ ,  $>1.5$ , and  $>1.25$  points for Short Form-36 PCS and AUSCAN pain and function, respectively, and  $<-5$ ,  $<-1.5$ , and  $<-1.25$ , respectively, for deterioration. Patients with differences between these levels were defined as having no change after 3 months. The items per domain in the patient satisfaction

questionnaire were summated and mean (SD) values were calculated.

## Results

### Patient population with hand osteoarthritis

In total, 439 patients with a verified diagnosis of hand osteoarthritis were referred to the clinical nurse specialist during the study period. Baseline data were available for all these patients, and clinical follow-up data were available for 195 patients (44%). The sociodemographic and clinical characteristics of the patients are shown in Table 1. Of the 195 patients who returned their questionnaires, 177 (87%) were female, and their mean age was  $59 \pm 9.0$  years. In 49% of these patients, pain in the first carpometacarpal joint was indicated at baseline. Pain in the interphalangeal joints was reported in 83%. The mean follow-up time was  $18.9 \pm 7.5$  weeks.

Table 1 also shows the sociodemographic and clinical characteristics of 244 patients who did not return their questionnaires. The majority of these patients were contacted by the clinical nurse specialist later by telephone, but reasons for nonresponse to the questionnaires were not recorded.

Patients with both baseline and follow-up data were significantly younger than patients with no follow-up data.

**Table 1** Demographic and clinical characteristics of 439 patients with hand osteoarthritis at baseline (195 with both baseline and follow-up data and 244 with baseline data only)

Demographic characteristics (number or mean)	Persons with baseline and follow-up data, n = 195 (%)	Persons with only baseline data (n = 244)	Mean difference (95% CI)	P value*
Female	177 (87)	228 (89)	2.6% (-2.4 to 8.0)	0.43
Age, years (SD)	59 (9.0)	62 (10.2)	3.2 (1.4 to 5.0)	<b>0.001</b>
BMI > 25 kg/m <sup>2</sup>	105 (60)	109 (59)	-1.1 (-11.2 to 9.1)	0.84
Marital status (yes/no)	136 (71)	149 (65)	-5.4% (-14.3 to 3.5)	0.24
Employment (yes/no)	78 (42)	64 (31)	-11.5% (-20.9 to -0.02)	<b>0.02</b>
Low education (yes/no)	62 (33)	87 (42)	8.8% (-0.6 to 18.3)	0.07
Current smoking (yes/no)	25 (14)	36 (18)	4.0% (-32.6 to 11.3)	0.28
OA at $\geq 2$ joint sites (yes/no)	89 (46)	121 (50)	4.0% (-5.0 to 13.3)	0.41
Use of assistive devices (yes/no)	57 (30)	107 (47)	16.9% (7.7 to 26.1)	<b>&lt;0.001</b>
Use of acetaminophen (yes/no)	69 (36)	100 (45)	8.5% (-1.0 to 18.0)	0.23
Use of NSAIDs (yes/no)	74 (39)	69 (31)	-8.4% (-17.7 to 0.1)	0.07
Use of physical therapy (yes/no)	50 (27)	65 (30)	2.6% (-6.3 to 11.5)	0.54
AUSCAN pain, range 0–20 (SD)	9.2 (3.9)	9.9 (4.5)	0.7 (-0.2 to 1.5)	0.12
AUSCAN stiffness, range 0–4 (SD)	1.90 (1.0)	1.95 (1.1)	0.05 (-0.16 to 0.26)	0.66
AUSCAN function, range 0–36 (SD)	15.6 (8.0)	17.3 (8.9)	1.7 (0.04 to 3.4)	<b>0.045</b>
AUSCAN total score, range 0–60 (SD)	26.5 (11.7)	28.8 (13.3)	2.3 (-0.09 to 4.8)	0.06
SF-36 PCS, range 0–100 (SD)	44.0 (7.8)	41.7 (8.9)	2.3 (0.6 to 4.0)	<b>0.007</b>
SF-36 MCS, range 0–100 (SD)	51.9 (9.0)	49.8 (10.7)	2.1 (0.1 to 4.1)	<b>0.038</b>

**Note:** \*Statistical significance,  $P \leq 0.05$ .

**Abbreviations:** SD, standard deviation; CI, confidence interval; NSAID, nonsteroidal anti-inflammatory drug; AUSCAN, Australian/Canadian Osteoarthritis Hand Index; SF-36, Short-Form 36; PCS, physical component summary score of the SF-36; MCS, mental component summary score of the SF-36.

In addition, in the group of patients with follow-up data, significantly more patients were in paid employment. No differences were seen in gender, body mass index, marital status, education, current smoking status, and osteoarthritis involvement in two or more joint sites between the two groups.

## Use of helping devices, analgesics, and physical therapy

Patients with complete data used significantly fewer assistive devices than those without follow-up data (Table 1). Use of helping devices increased significantly by 10%, from 30% at baseline to 40% at follow-up after the consultation (Table 2). At baseline, no difference was seen in the use of acetaminophen in patients without follow-up compared with patients with complete data. In patients with follow-up data, acetaminophen use increased by 14% after the consultation, from 35% at baseline to 49% at follow-up (Table 2).

No significant changes were seen in the use of physical therapy after consultation, even if patients were stratified according to whether they had hand osteoarthritis only or had hand osteoarthritis in combination with knee and/or

hip osteoarthritis. However, there was a mean difference in increase in the use of physical therapy of 9.6% in patients who also had osteoarthritis in the lower extremities (Table 2).

## Self-reported pain and disability

Patients with follow-up data scored better on the AUSCAN function subscale at baseline than patients without follow-up data, and no differences were seen between the groups for self-reported pain and stiffness (Table 1). In the patients with follow-up data, no change was seen in any AUSCAN subscale after the consultation (Table 2). For AUSCAN pain, 48 patients improved, 99 showed no change, and 48 patients deteriorated, whereas for AUSCAN function, 57 patients improved, 33 showed no change, and 54 deteriorated. Patients who deteriorated on these subscales after 3 months did not differ in demographic characteristics from those who did not deteriorate (data not shown).

## Quality of life

At baseline, physical health (reflected by PCS) was decreased in patients with hand osteoarthritis when compared with the norm-based Dutch population, whereas mental health

**Table 2** Distribution of use of pharmacological treatment, nonpharmacological treatment (n, [%]), and health-related outcome measures (mean [SD]) at baseline and follow-up in 195 patients with hand osteoarthritis and follow-up data

Variable, number or mean	Baseline n = 195 (%)	Follow-up n = 195 (%)	Mean difference (95% CI)	P value*
Use of assistive devices (yes/no)	57 (30)	74 (40)	10.2% (3.0 to 17.4)	<b>0.009</b>
Use of acetaminophen (yes/no)	69 (35)	94 (49)	14.0% (5.9 to 22.0)	<b>0.002</b>
Use of NSAID (yes/no)	74 (39)	67 (35)	-3.8% (-10.4 to 2.8)	0.26
Use of physical therapy (yes/no)	50 (27)	55 (29)	1.1% (-6.1 to 8.4)	0.40
Physical therapy in mono OA (%)	23 (23)	18 (18)	-5.3% (-14.0 to 3.4)	0.23
Physical therapy in poly OA (%)	27 (33)	37 (42)	9.6% (-2.4 to 21.5)	0.12
AUSCAN pain (SD)	9.2 (3.9)	9.0 (4.3)	-0.2 (-0.7 to 0.4)	0.52
AUSCAN stiffness (SD)	1.91 (1.0)	1.86 (1.0)	-0.05 (-0.2 to 0.1)	0.54
AUSCAN function (SD)	15.62 (8.1)	15.57 (7.9)	-0.05 (-1.1 to 1.0)	0.92
AUSCAN total score (SD)	26.4 (11.8)	25.7 (12.1)	-0.7 (-2.2 to 0.8)	0.35
SF-36 PCS (SD)	44.0 (7.8)	45.0 (8.2)	1.0 (0.07 to 1.9)	<b>0.034</b>
Physical function (SD)	47.0 (8.6)	46.7 (8.9)	-0.3 (-1.1 to 0.5)	0.44
Role limitations due to physical health problems (SD)	45.0 (10.3)	47.2 (10.4)	2.2 (0.7 to 3.7)	<b>0.004</b>
Bodily pain (SD)	43.4 (6.7)	44.4 (7.4)	1.0 (0.4 to 2.0)	<b>0.042</b>
General health (SD)	48.0 (6.6)	47.7 (6.6)	-0.2 (-0.9 to 0.5)	0.51
SF-36 MCS (SD)	51.9 (9.0)	51.6 (9.7)	-0.3 (-1.4 to 0.8)	0.57
Vitality/energy (SD)	47.6 (9.2)	47.7 (8.6)	0.1 (-0.8 to 1.1)	0.77
Social functioning (SD)	49.0 (9.1)	49.7 (9.1)	0.7 (-0.4 to 1.8)	0.23
Role limitations due to emotional problems (SD)	50.7 (9.9)	50.2 (10.8)	-0.5 (-2.0 to 0.9)	0.46
Mental health (SD)	50.8 (8.6)	50.8 (9.1)	0.02 (-0.9 to 0.9)	0.97

**Note:** \*Statistical significance,  $P \leq 0.05$ .

**Abbreviations:** SD, standard deviation; CI, confidence interval; NSAID, nonsteroidal anti-inflammatory drug; mono OA, patients with hand osteoarthritis only; poly OA, patients with hand osteoarthritis combined with knee or hip osteoarthritis; AUSCAN, Australian/Canadian Hand Osteoarthritis Index; SF-36, Short-Form 36; PCS, physical component summary score of the SF-36; MCS, mental component summary score of the SF-36.

(reflected by MCS) was not decreased in comparison with the norm-based Dutch population. Patients with only baseline data scores fared significantly worse on the PCS and MCS than patients with complete data (Table 1). For the patients with follow-up data, the PCS and subscales “role limitations due to physical health problems” and “bodily pain” improved significantly, whereas neither the MCS nor its subscales showed significant differences after the clinic consultation and the telephone consultation (Table 2). For the PCS, 57 patients improved after 3 months, 84 showed no change, and 30 deteriorated. Patients who deteriorated on the PCS after 3 months did not differ in demographic characteristics from those who did not deteriorate (data not shown).

### Patient satisfaction questionnaire

Because only one patient indicated being “not fully satisfied” on several questions, the answers “not fully satisfied” and “not satisfied” were combined into one category. This was also done with the answers for “fully satisfied” and “satisfied”. For all 13 statements of the satisfaction questionnaire on the quality of the consultation, at least 125 (78%) of the patients were satisfied or fully satisfied (Table 3). The mean scores of summation for items per domain are shown in Table 4. The overall satisfaction report mark for the clinical nurse specialist (range 0–10) was  $8.0 \pm 1.0$ .

### Discussion

The results of this proof-of-concept study show that a single short consultation and one telephone contact with the clinical

nurse specialist in patients with hand osteoarthritis, as part of standard usual care, appear to improve the physical dimension of health-related quality of life. Improvement of the physical component was mainly determined by improvements on the subscales “role limitations due to physical health problems” and “bodily pain”. Self-reported hand pain and disability, as assessed with a specific hand function measure, did not change after consultation. The use of helping aids/devices and acetaminophen was increased after intervention, whereas the usage of NSAIDs showed a trend towards a decrease. Most patients were satisfied with the education.

The strength of this study was that it was possible and feasible to offer a short standardized consultation with a clinical nurse specialist to a large number of patients with hand osteoarthritis in rheumatology practice (over 400 patients in 3.5 years) and collect data from these patients, which reflects the daily clinical practice of hand osteoarthritis management. In this study, the Short Form-36 was used to measure health-related quality of life, and a small increase was shown, after a relatively small amount of effort. A recent randomized controlled Norwegian trial showed that assistive technology (defined as assistive devices and splints) improved activity and satisfaction performance in patients with hand osteoarthritis compared with provision of information only.<sup>7</sup> Although health-related quality of life was not investigated in this randomized controlled trial, the positive effect of assistive technology could possibly lead to better health-related quality of life. Surprisingly, in the present study no change was seen between baseline and follow-up with regard to self-reported

**Table 3** Distribution of answers given to questions about satisfaction with visit to clinical nurse specialist in 195 patients with hand osteoarthritis (missing n = 32)

Question	Fully satisfied* (n, %)	Not satisfied** (n, %)	Do not know (n, %)
CNS is informed about the newest developments in the treatment of OA	125 (78%)	0 (0%)	36 (22%)
I had the impression that the CNS had a lot of knowledge about OA and its treatment	151 (93%)	3 (2%)	9 (6%)
CNS gave me clear explanation about how to cope with OA in daily life	158 (98%)	2 (1%)	2 (1%)
CNS gave me exactly the information I needed	146 (91%)	4 (3%)	10 (6%)
I received sufficient information about OA	149 (92%)	0 (0%)	13 (8%)
I was informed sufficiently about the treatment of OA	127 (79%)	4 (3%)	29 (18%)
Information I received was set up to what I found important	148 (91%)	2 (1%)	12 (7%)
Written information was clear and easy to understand	156 (98%)	1 (1%)	1 (1%)
CNS sensed well what having OA means to me	139 (87%)	1 (1%)	20 (13%)
CNS has a good overview of the problems I experience in daily life	133 (84%)	2 (1%)	23 (15%)
There was sufficient opportunity to ask questions	159 (99%)	1 (1%)	0 (0%)
Visit to the CNS satisfied fully to my expectations	137 (87%)	6 (4%)	15 (10%)
Visit to the CNS was very useful to me	140 (88%)	3 (2%)	17 (11%)

**Notes:** \*Persons who answered “fully satisfied” and “satisfied” were categorized into one group; \*\*persons who answered “not fully satisfied” and “not satisfied” were categorized into one group.

**Table 4** Satisfaction measured in 195 patients with hand osteoarthritis who received a clinical nurse specialist consultation at baseline and follow-up

Domain (subscore range)	Items	Summated items (mean, SD, range)
Knowledge (0–8)	2	6.3 (1.26, 3–8)
Quality of information (0–20)	5	16.0 (2.63, 10–20)
Empathy (0–8)	2	6.2 (1.24, 2–8)
Usefulness (0–16)	4	12.7 (2.47, 3–16)
Total (0–65)	13	41.4 (6.46, 26–52)
Overall satisfaction report mark (0–10)		8.0 (1.0, 5–10)

**Abbreviation:** SD, standard deviation.

function, measured by AUSCAN. The same randomized controlled Norwegian trial showed persons treated with an assistive device report less functional limitation,<sup>7</sup> whereas other systematic reviews showed positive effects of joint protection education on function.<sup>27,28</sup> It could be that the consultation with the clinical nurse specialist does not directly improve disease-specific complaints of hand osteoarthritis, but improves health status in general after attention and information from the clinical nurse specialist.

After the visit to our clinical nurse specialist, more assistive devices and acetaminophen were used. These changes in health care use are in accordance with the advice given by the rheumatologist and clinical nurse specialist. This finding suggests that patients with hand osteoarthritis do follow advice given by a clinical nurse specialist and/or that the clinical nurse specialist is fulfilling his/her role in an adequate way by actively helping patients to gain access to assistive devices or advising acetaminophen use instead of NSAIDs. A trend towards lower use of NSAIDs was observed. In an earlier study, a nurse-directed education program was more effective in reducing use of NSAIDs than routine osteoarthritis care only.<sup>29</sup> However, that 18-week study comprised four telephone calls and one follow-up visit, while patients in the present study were educated once and received one telephone call.

The present study shows that most patients were satisfied with information and education from a clinical nurse specialist in a short consultation. Hill et al showed that patient satisfaction was good in osteoarthritis patients who received care from a clinical nurse specialist, compared with a hospital doctor.<sup>15</sup> The high internal consistency of this patient satisfaction questionnaire was shown by the high scores of the Cronbach's alpha. It is possible that nonresponders were less satisfied with the consultation, and could explain why questionnaires were not returned

as requested, but unfortunately no information on the nonresponders was available.

This study is a description of what follows after a clinical nurse specialist consultation with regard to health-related quality of life and use of assistive devices/analgesics in patients with hand osteoarthritis, in order to gain insight into whether improvements in hand osteoarthritis management could be achieved with a relatively small amount of effort and time. That no control group was included in this study is a limitation, as is the lack of information on the nonresponders. It is conceivable that patients who were reassured that they did not have an inflammatory rheumatic disease did not find it necessary to return their questionnaires to the clinical nurse specialist. Also, the clinical nurse specialist did not record systematically which additional health professionals were consulted after the baseline visit and whether concomitant diseases were present that might have influenced the positive or negative effects in this study.

Furthermore, the multiple comparisons in this study should be addressed. In Table 2, 14 comparisons have been performed, which could have led to a false-positive finding by chance only. However, we observed five statistically significant findings, and these findings supported each other (more paracetamol use, more assistive devices use, less NSAID use [although not significant]), which makes it more likely that the findings are true and not only found by chance.

The effect sizes found in this study were relatively small, as could be expected in the field of osteoarthritis management.<sup>6,19,30,31</sup> However, it should be kept in mind that this study was not designed as an effectiveness study, but rather as a proof-of-concept study. Any positive findings following this relatively simple and cheap intervention would justify further research into its cost-effectiveness as compared with the complex, multidisciplinary interventions that are nowadays offered for this condition.

However, our findings reflect the daily clinical reality in secondary care, which we can explore to see if there is an easy and comprehensive way of providing care sufficient to manage hand osteoarthritis, instead of extensive rehabilitation programs. The findings indicate that there is room for improvement in integrated care for hand osteoarthritis and can be used to design future randomized controlled trials of the role of the clinical nurse specialist in care, including a control group. Furthermore, there is a possibility that the positive significant results were biased by the eagerness of patients to please the clinical nurse specialist. Patients could feel some social pressure to answer positively on the

satisfaction questionnaire, or may have not returned the postal questionnaire if they were not satisfied with the care provided. However, one patient who was not fully satisfied provided constructive feedback to the clinical nurse specialist for improvement.

In conclusion, a single 1-hour consultation and telephone follow-up by a clinical nurse specialist appears to be a feasible and potentially effective contribution to the management of hand osteoarthritis in secondary care, which is relatively cheap in comparison with multidisciplinary treatment programs. The majority of patients were satisfied with the consultation. Further controlled trials are needed to determine the added value of the clinical nurse specialist in the care of patients with hand osteoarthritis. Cost-effectiveness should also be investigated.

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## Disclosure

The authors report no conflicts of interest in this work.

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