CHARACTERISTICS OF PERSONS WITH HAND OSTEOARTHRITIS

USING COMPLEMENTARY AND ALTERNATIVE MEDICINE

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SAMMENDRAG

Artrose er en av de hyppigste revmatiske sykdommene i den industrialiserte delen av verden og prevalensen er stigende med økt levealder og overvekt i befolkningen. Vårt mål med denne studien var å øke kunnskapen om bruken av komplementær og alternativ medisin (KAM) i behandlingen av håndartrose, samtidig som vi ønsket å undersøke hva som karakteriserer gruppen av håndartrosepasienter som benytter seg av denne typen behandling av sine leddplager. Så vidt oss bekjent, har ikke tidligere arbeider gått nærmere inn på denne problemstillingen.

Studien vår er en del av den store Nor-Hand studien som allerede har generert mye ny kunnskap om håndartrose. Nor-Hand studien er en prospektiv kohortstudie, utført på 300 håndartrosepasienter rekruttert fra Revmatologisk avdeling på Diakonhjemmet Sykehus, Oslo. De aktuelle analyser er basert på tverrsnittsdata hentet fra den første undersøkelsen av pasientene i 2016-2017. Deltagerne hadde på forhånd, eller rett etter undersøkelsen, fått tilsendt en rekke spørreskjemaer til utfylling. Spørreskjemaene inneholdt demografiske spørsmål, spørsmål om livsstil, medisiner, tidligere kirurgiske inngrep og pasientens bruk av KAM de siste tolv måneder. I tillegg svarte deltagerne på spørreskjemaer om helserelatert livskvalitet, psykisk helse, leddsmerter og fysisk funksjon. De 300 deltagerne ble delt inn i to grupper der den ene gruppen besto av pasienter som hadde benyttet seg av minst én av ti utvalgte KAM modaliteter for sine leddplager de siste tolv måneder. Den andre gruppen besto av pasienter som ikke hadde benyttet seg av noen form for KAM for sine leddplager. For å sammenligne de to gruppenes karakteristika ble det utført kji-kvadrat test for kategoriske variabler og henholdsvis T-test og Mann-Whitney U-test for kontinuerlige variabler, avhengig av fordeling. De statistiske analysene ble gjennomført ved hjelp av SPSS versjon 27 (IBM).

Vi fant at nesten en fjerdedel av håndartrosepasientene inkludert i vår studie, hadde benyttet seg av minst én form for KAM for sine leddsymptomer, de siste tolv måneder. Sett i lys av mangelen på sykdomsmodifiserende behandling for artrose, er dette etter vår oppfatning et rimelig funn. Andelen av kvinner blant gruppen av pasienter som benyttet seg av KAM var signifikant høyere enn i gruppen som ikke brukte KAM. Dette er sammenfallende med tidligere forskning på artrose generelt, og kneartrose spesielt. Dessuten er det vist at kvinner mer aktivt søker helsehjelp enn menn.

Gruppen av pasienter som benyttet seg av KAM led av mer generelle leddsmerter, til tross for at det ikke var noen signifikant forskjell mellom gruppene hva gjaldt smerter i hendene. De rapporterte også mer symptomer i knær og hofter. Selv om Nor-Hand studien undersøker pasienter med artrose i hendene, er det vanlig at flere ledd er rammet hos disse pasientene. I spørreskjemaet som ble brukt ble det derfor spurt om leddsmerter generelt.

Kroniske revmatiske sykdommer er inngripende og påvirker ofte pasientens fysiske og psykiske helse, så vel som sosiale aspekter ved livet. Vi fant at gruppen av pasienter som benyttet seg av KAM hadde en høyere grad av komorbiditet og mer angstsymptomer, i tillegg til en mer tilnærmingsorientert mestringsatferd. En sannsynlig forklaring på disse funnene, kan være at den totale sykdomsbyrden sannsynliggjør en mer søkende atferd med økt bruk av alternative behandlingsmetoder i tillegg til, eller istedenfor konvensjonell medisin. KAM-brukerne rapporterte også om hyppigere bruk av reseptbelagte og ikke-reseptbelagte smertestillende som Paracet, NSAIDs og opioider. I tillegg hadde de en hyppigere bruk av ikke-farmakologiske intervensjoner samt flere gjennomgåtte kirurgiske inngrep på ledd og ligamenter. Dette støtter tidligere forskning om at KAM komplementerer og ikke erstatter konvensjonell medisin. Det er sannsynlig at den høyere forekomsten av farmakologiske, ikke-farmakologiske og kirurgiske intervensjoner blant håndartrosepasienter som benytter seg av KAM, delvis kan forklares av et høyere symptomtrykk, og delvis av en mer tilnærmingsorientert mestringsatferd. Til sammen utgjør dette interessante funn som indikerer at forskning på bruken av KAM blant pasienter med håndartrose, er et nødvendig bidrag til den økte kunnskapen om artrose generelt og håndartrose spesielt.

CHARACTERISTICS OF PERSONS WITH HAND OSTEOARTHRITIS USING COMPLEMENTARY AND ALTERNATIVE MEDICINE

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ABSTRACT

Objective. The frequency and characteristics of patients with hand osteoarthritis (OA) using complementary and alternative medicine (CAM) is unknown. Our aim was to examine the frequency of CAM in a hand OA population, and to compare demographic and clinical characteristics between hand OA patients using and not using CAM.

Methods. We included 300 hand OA patients from the Nor-Hand study in our analyses. They responded to questionnaires concerning demographic information, medical assessments and their use of CAM during the past twelve months. In addition, patients answered questions about health-related quality of life, phycological health, joint pain and physical function. The characteristics of the two groups were compared using chi-square tests for categorical variables and t-test or Mann Whitney test for continuous variables, as appropriate.

Results. In total 22.8% of the hand OA patients had been using CAM for their joint symptoms and women were more likely to seek alternative therapies than men (97.1% vs 86.2%, p=0.01). The CAM users reported more severe joint pain when taking all joints into account (mean 4.5 vs 3.9, p=0.04), whereas no difference in level of hand pain was found. Patients using CAM reported more frequent use of conventional analgesics and opioids as well as non-pharmacological interventions and surgery on ligaments and joints. The CAM users also reported more comorbidities and anxiety symptoms and they were characterized by having a more approach-seeking behaviour.

Conclusion. Use of CAM is frequent among hand OA patients in secondary care. CAM users have more joint symptoms and used more conventional medicine. In addition, they have more comorbidities and anxiety symptoms as well as a more approach-seeking behaviour.

INTRODUCTION

Osteoarthritis (OA) is the most frequent rheumatic joint disease in the developed countries and is the leading cause of disability in older adults. Hand OA is one of the most common phenotypes and 14% of women and 7% of men between the ages of 40-84 years have symptomatic hand OA, according to data collected in the population-based Framingham study(1). Pain and aching are some of the hallmark symptoms of the disease and what most frequently drives OA patients to seek medical assistance(2). Reduced grip strength, stiffness, loss of mobility, aesthetic damage and disability are other important symptoms of hand OA that contributes to functional limitations and reduced quality of life(3). Further, individuals with OA in one joint will often have other joints affected, resulting in greater symptomatic burden of the disease(4). According to previous studies hand OA patients referred to secondary care have similar degree of symptoms as patients with rheumatoid arthritis (RA)(5). Despite being a prevalent disease, options to treat patients with OA have been limited and no disease-modifying drugs (DMOADs) currently exist, hence treatment is focused on pharmacological and non-pharmacological symptom relieving therapies(6, 7). Pain caused by OA is usually treated with oral analgesics and nonsteroidal anti-inflammatory drugs, while in more severe cases orthopedic surgical interventions are required. Due to limited symptom relief from conventional medicine and surgical interventions, OA patients are seeking an increasing number of different complementary and alternative therapies (CAM) which refers to health care practices that are not an integral part of conventional medicine(8). Previous studies have shown that OA symptoms is among the most common reasons for using CAM(9, 10). Prior studies have also explored characteristics of arthritis patients in general using CAM and suggested that women and participants with higher level of education were more likely to report current use of alternative therapies (11, 12).

Although some studies have explored the rates of CAM used by knee OA patients (13), little is known about the use of CAM in hand OA particularly. As far as we are concerned, no previous studies have explored the frequency and characteristics of hand OA patients using CAM in treatment of their hand OA symptoms.

Using cross-sectional data from the Nor-Hand study, our primary aim was to compare demographic and clinical characteristics between hand OA patients using and not using CAM.

MATERIAL AND METHODS

Study population

The Nor-Hand study is a large hospital-based observational cohort study, including 300 patients recruited from a rheumatology outpatient clinic at Diakonhjemmet Hospital in Oslo, Norway. The current analyses are based on cross-sectional data from the baseline examination in 2016-2017. Consecutive eligible patients included men and women (ages 40-70 years) with ≥ 1 interphalangeal or thumb base joint with OA, diagnosed clinically and/or by ultrasound. Individuals with rheumatoid arthritis, spondyloarthritis, psoriatic arthritis, psoriasis or hemochromatosis were excluded. Detailed inclusion/exclusion criteria have been previously published (14). All participants signed informed consent and the study was approved by the regional ethics committee.

Data collection

All participants were invited to a test evening at Diakonhjemmet Hospital where they underwent the clinical examinations. The participants received standardized questionnaires administered in Norwegian in an electronic case report form (eCRF), or alternatively in paper form, prior to or just after the clinical examination.

Demographic factors

The participants reported whether they lived in a relationship or not, their highest education level accomplished (7 categories) and current working position.

Complementary and alternative medicine (CAM)

The questionnaire was developed by National Research Centre for complementary and alternative medicine (NAFKAM) and contained 6 questions regarding the patients´ self-initiated use of CAM in treatment for their OA. In the first question the patient was asked which out of 10 different alternative therapies (acupuncture, homeopathy, reflexology, healing, kinesiology, massage, naprapathy, gestalt therapy, thought field therapy, others) he/she had received last 12 months. The patients were asked to list their dietary and herbal supplements. Lastly the patients indicated their effect of CAM (4 response options: not received, good, none, worse).

OA symptoms and clinical findings

OA symptoms were self-reported by standardized questionnaires. AUSCAN is a disease-specific questionnaire, which measure pain, stiffness and physical function in patients with hand OA during the last 48 hours. Each subscale contains five, one and nine questions, respectively, each with 5 response options (0-4). The sum scores for the pain, stiffness and physical function subscales range from 0-20, 0-4 and 0-36, respectively, with higher scores representing worse health. The AUSCAN index has been translated into Norwegian and is shown to be valid and reliable (15, 16). Participants reported their OA symptoms in knees/hips on the Western Ontario and McMaster Universities Arthritis Index (WOMAC) (17). The self-administered questionnaire consists of 24 items divided into 3 subscales of pain, stiffness and physical function containing five, two and seventeen items, respectively. The test questions have response options (0-4), and the subscale sum scores are 0-20, 0-8 and 0-68 for pain, stiffness and physical function, respectively, where higher scores indicate worse health. The participants indicated their pain intensity in the hands and overall, in all joints during the last 24 hours on two separate Numeric Ratings Scales (NRS) from 0 to 10, where 0 represents "no pain" and 10 represents "worst pain imaginable".

One rheumatologist or a rheumatology resident examined whether the participants fulfilled the clinical American College of Rheumatology criteria (ACR) for OA in hands and knees (18, 19). The overall hand OA disease activity was summarised on an NRS from 0-10. All participants obtained bilateral frontal hand radiographs (posterioanterior view). The 2nd-5th distal interphalangeal, 1st-5th proximal interphalangeal, 1st-5th metacarpophalangeal and 1st carpometacarpal joints were evaluated by an experienced reader (IKH) using the Kellgren-Lawrence scale (20). The scaphotrapeziotrapeziodal joints were scored similarly, although not included in the original scale. The intra-reader reliability was excellent (ICC 0.99, weighted κ=0.92) (21).

Comorbidities, medications and psychological health

Data on comorbidities were collected by having each patient respond to The Self-Administered Comorbidity Questionnaire, which includes 12 of the most prevalent medical conditions in general practice and 3 additional unspecified conditions (22). The questionnaire includes questions about treatment and impact on daily activities giving a comorbidity index with a total score of 0-45.

The participants were asked to bring their list of medications, including those that were taken regularly and on demand. Numbers of patients taking oral anaesthetics (non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol, opioid or opioid-like drugs) regularly or on demand were calculated based on screening of the list of medications. The participants use of non-pharmacological interventions like hand-orthosis and customized aiding tools was also reported.

Psychological health was assessed using the Hospital Anxiety and Depression Scale (HADS), containing 14 questions on 0-3 scales. Sum scores for each subscale range from 0-21 (23), with scores 8 or more indicating a need of further assessment of possible anxiety and/or depression disorder (24). Pain Catastrophizing Scale (PCS) consists of 13 questions divided into 3 subscales to experience the thoughts and feeling of the patients when experiencing pain (9). Sum score ranges from 0-52, where higher score reflects more pain catastrophizing. The Arthritis Self Efficacy Scale (ASES), originally designed for RA, evaluate the patients ability to influence pain (5 questions) and other symptoms of rheumatic diseases (6 questions) where the score ranges from 0-100 and a higher score indicates greater self-efficacy (25). The Brief Approach/Avoidance Coping Questionnaire (BACQ) includes 12 questions divided into two subscales in order to differ between approach- versus avoidance-oriented coping behaviour (26, 27). Each of the two subscales contains 6 questions with 5 response options from "strongly disagree" to "strongly agree" and the sum score ranges from 5-30. A high sum score on each of the two subscales represents higher approach-oriented and a lower avoidance-oriented coping behaviour respectively. The participants were asked to indicate their fatigue on a NRS from 0-10, and to respond to one question regarding their sleep quality with 5 response options ranging from normal sleep to severe insomnia. To calculate the body mass index (BMI, kg/m^2) weight and height were measured by a trained medical student.

Health behaviour

Drinking behaviour was examined with a question about the frequency of alcohol consumption per week (5 categories). In the analyses the variable was dichotomized into 2-4 times per week/more seldom. Participants also responded to a question about smoking (4 categories), and the variable was dichotomized into current daily/non-daily smokers vs never/previous smokers in the analyses.

Statistical analyses

Categorical variables were described with frequencies and percentages, while continuous variables were summarized with either mean (standard deviation, SD) or median (interquartile range, IQR) scores, depending on their distribution. The study population was divided into two groups, i.e., persons using one or more of the ten listed CAM, and persons not using any CAM for their OA symptoms. The characteristics of the two groups were compared using chi-square tests for categorical variables and t-test or Mann Whitney test for continuous variables, as appropriate. Statistical analyses were performed using SPSS version 27 (IBM), and p-values<0.05 were considered statistically significant.

RESULTS

Patient characteristics

The demographic and clinical characteristics of the 300 patients are presented in Table 1. The vast majority of the patients in the Nor-Hand study were women, and their median age was 61 years. The study population were highly educated with more than half of the participants having at least one year of college or university education. The majority fulfilled the ACR criteria for hand OA, and the level of pain was similar in the hands as in all joints. In general, the scores for anxiety, depression and pain catastrophizing were low, although a wide range was found. Self-reported anxiety symptoms were more common than depressive symptoms, with 51 participants (17.0%) having a HADS anxiety score of ≥8. In comparison 23 participants (7.7%) had HADS depression score of ≥ 8. The self-efficacy was high for both pain and total symptoms, while the BACQ approach reported was higher than BACQ avoidance. The prevalence of potentially harmful drinking was high within the group, while few participants were smoking.

Table 1: Demographic and clinical characteristics of the 300 participants

Female sex, n (%)	266 (88.7)
Age, median (IQR)	61.0 (56.7-65.9)
Relationship, married or living with partner, n (%) *	197 (70.1)

Higher education (at least one year in University or other higher education), n (%) *	174 (58.2)
Work, with a working position, n (%) *	160 (53.7)
AUSCAN pain (range: 0-20), mean (SD)	8.3 (4.1)
AUSCAN stiffness (range: 0-4), mean (SD)	1.6 (0.9)
AUSCAN physical (range: 0-36), mean (SD)	13.4 (8.1)
WOMAC pain (range: 0-20), median (IQR) *	5.0 (1.0-9.0)
WOMAC stiffness (range: 0-8), median (IQR) *	2.0 (1.0-4.0)
WOMAC physical (range: 0-68), median (IQR) *	9.0 (2.0-17.0)
NRS hand pain (range: 0-10), mean (SD) *	3.7 (2.2)
NRS pain in all joints (range: 0-10), mean (SD) *	3.9 (2.2)
ACR criteria for hand OA, n (%)	278 (92.7)
ACR criteria for knee OA, n (%)	198 (67.8)
KL sum score (range: 0-128), median (IQR)	27.9 (15.0-43.0)
Comorbidity index (range: 0-45), mean (SD)	7.2 (4.2)
HADS anxiety (range: 0-21), median (IQR) *	4.0 (1.0–6.0)
HADS depression (range: 0-21), median (IQR) *	2.0 (1.0-4.0)
Pain catastrophizing scale (PCS) (range: 0-52), median (IQR) *	9.0 (5.0-15.0)
ASES pain (range: 10-100), mean (SD) *	62.8 (16.3)
ASES symptom (range: 10-100), mean (SD) *	73.0 (14.6)
BACQ approach (range: 5-30), mean (SD) *	21.0 (3.2)
BACQ avoidance (range: 5-30), mean (SD) *	16.7 (3.2)
NRS fatigue (range: 0-10), median (IQR) *	4.0 (2.0-6.0)
Sleeping problems, (moderate and severe), n (%) *	122 (40.7)
Body mass index, mean (SD)	26.5 (5.0)
Alcohol, drinking alcohol 2-4 times weekly, n (%) *	120 (40.1)

Current smokers, (daily/non-daily smokers), n (%)	45 (15.0)

HADS=Hospital Anxiety and Depression Scale, BACQ= Brief Approach/Avoidance Coping Questionnaire, ASES=Arthritis Self Efficacy scale, AUSCAN=Australian/Canadian Osteoarthritis hand index, WOMAC= Western Ontario and McMaster Universities Arthritis Index, NRS=Numerical Rating Scale, ACR=American College of Rheumatology, KL=Kellgren-Lawrence rating scale.

* N=1 missing for education, AUSCAN stiffness, NRS hand, WOMAC pain, alcohol, sleep. N=2 missing for work, WOMAC physical, PCS. N=3 missing for BACQ approach and avoidance, NRS all joints, N=4 missing for SES pain and symptom, NRS fatigue. N=8 for ACR knee. N=10 missing for HADS anxiety and depression. N=19 missing for relationship

Frequency of complementary and alternative medicine (CAM)

In total 68 (22,6%) participants reported using CAM in treatment of their OA in the past 12 months, with the 2 most frequently used modalities being massage (12.3%) and acupuncture (9.3%). Two or more different CAM was used by 23 (7,7%) of the participants, while 4 (1,3%) were using 3 or more modalities. Other kinds of CAM than the ones explicably mentioned in Table 2 were used by 16 participants (5.3%), and included aroma therapy, osteopathy, Ayurveda and magnetic treatment.

Table 2: Number (%) of participants using CAM

Acupuncture	28 (9.3)
Homeopathy	3 (1.0)
Reflexology	7 (2.3)
Healing, healing touch, healing reading	5 (1.7)
Kinesiology	0 (0.0)
Massage	37 (12.3)
Naprapathy	8 (2.7)
Gestalt therapy	1 (0.3)
Thought field therapy	0 (0.0)
Other	16 (5.3)

CAM= Complementary and Alternative Medicine

Comparison of demographic and clinical characteristics between patients using and not using CAM

There was a statistically significant higher proportion of women in the group of patients using CAM in treatment of their OA, compared with the group not using CAM. The group of patients using CAM had a statistically significant higher comorbidity index, HADS anxiety score and BACQ approach score than the group of patients not using CAM. The frequency of living with a partner and having a working position was lower in the group of patients using CAM, although only borderline statistically significant. Participants using CAM reported more severe joint pain when taking all joints into account, whereas no difference between the two groups was found in the levels of hand pain. The scores on both WOMAC stiffness and pain were also higher within the group of participants using CAM, although only the difference in stiffness was statistically significant.

Table 3: A comparison of demographic and clinical characteristics between participants using and not using CAM

	Using CAM (n=68)	Not using CAM (n=232)	P-value
Female sex, n (%)	66 (97.1)	200 (86.2)	0.01
Age, median (IQR)	60.9 (56.0-66.8)	61.3 (56.8-65.8)	0.95
Relationship, n (%) living with partner,	35 (60.3)	162 (72,6)	0.07
Education, n (%) with higher education	39 (57.4)	135 (58.4)	0.87
Work, n (%) with a working position	30 (44.1)	130 (56.5)	0.07
AUSCAN pain mean (SD)	8.6 (4.1)	8.1 (4.0)	0.41
AUSCAN stiffness, mean (SD)	1.63 (0.9)	1.66 (1.0)	0.81
AUSCAN function, mean (SD)	14.0 (8.0)	12.8 (7.8)	0.32
WOMAC pain, median (IQR)	6.0 (2.0-10.0)	5.0 (1.0-9.0)	0.09
WOMAC stiffness, median (IQR)	3.0 (2.0-4.0)	2.0 (1.0-4.0)	0.03
WOMAC physical, median (IQR)	10.0 (4.0-22.0)	9.0 (1.1-15.0)	0.11

NRS hand, mean (SD)	3.9 (2.1)	3.7 (2.3)	0.47
NRS all joints, mean (SD)	4.5 (2.0)	3.9 (2.3)	0.04
ACR criteria for hand OA, n (%)	63 (92.6)	215 (92.7)	0.99
ACR criteria for knee OA, n (%)	42 (67.7)	156 (67.8)	0.99
KL sum score (IQR)	24.0 (10.0-36.8)	29.0 (16.0-44.0)	0.09
Comorbidity index, mean SD	9.4 (4.3)	7.2 (4.1)	<0.001
HADS anxiety, median (IQR)	5.0 (2.5-8.0)	3.0 (1.0-6.0)	0.003
HADS depression, median (IQR)	2.0 (1.0-4.0)	2.0 (1.0-4.0)	0.73
Pain catastrophizing scale, median (IQR)	10.0 (5.0-18.0)	9.0 (5.0-14.0)	0.12
ASES pain, mean (SD)	63.6 (16.4)	62.5 (16.2)	0.63
ASES symptom, mean (SD)	72.4 (15.5)	73.1 (14.4)	0.72
BACQ approach, mean (SD)	21.9 (3.3)	20.7 (3.2)	0.007
BACQ avoidance, mean (SD)	17.3 (3.3)	16.6 (3.2)	0.14
NRS fatigue, (IQR)	4.0 (2.0-7.0)	4.0 (2.0-6.0)	0.26
Sleeping problems, n (%)	31 (46.3)	91 (39.2)	0.30
Body mass index, mean (SD)	26.1 (4.7)	26.6 (5.0)	0.43
Alcohol, n (%) drinking alcohol 2-4 times weekly	25 (36.8)	95 (41.1)	0.52
Current smokers, n (%)	10 (14.7)	35 (15.1)	0.94

CAM= Complementary and Alternative Medicine

The use of other treatments by participants using and not using CAM

The users of CAM were more frequent users of NSAIDS, paracetamol and opioids/weak opioids than the patients not using CAM, although only statistically significant for NSAIDs. The users of CAM were also more frequent users of non-pharmacological interventions such as hand orthosis and customized aiding tools (can openers, knives, cork screws etc) and had underwent more surgery on ligaments and joints. We found no statistically significant

difference between the two groups regarding dietary supplements like collagen plus, glucosamine, cod liver oil and other marine oils, taken the past 12 months.

Table 4: The use of other treatments by participants using and not using alternative medicine

	Using CAM	Not using CAM	P-value
Regular use of NSAIDs, n (%) *	7 (10.3)	25 (10.8)	0.901
On demand use of NSAIDs, n (%) *	40 (58.8)	96 (41.6)	0.012
Regular use of paracetamol, n (%) *	4 (5.9)	11 (4.8)	0.710
On demand use of paracetamol, n (%) *	40 (58.8)	116 (50.2)	0.212
Regular use of opioids/opioid-like drugs, n (%)	0 (0.0)	6 (2.6)	0.179
On demand use of opiods/opioid-like drugs, n (%) *	8 (11.8)	16 (6.9)	0.197
Regular use of benzodiazepines, n (%) *	2 (2.9)	5 (2.2)	0.710
On demand use of benzodiazepines, n (%) *	5 (7.4)	10 (4.3)	0.315
Cortisone injections, n (%) *	26 (38.8)	70 (30.7)	0.213
Hand orthosis, n (%) *	24 (36.4)	45 (19.6)	0.004
Customized aiding tool, n (%) *	30 (44.8)	60 (26.1)	0.003
Prosthesis, n (%)	9 (13.2)	27 (11.6)	0.721
Arthrodesis, n (%)	4 (5.9)	16 (6.9)	0.768
Synovectomy, n (%)	6 (8.8)	17 (7.3)	0.683
Other joint or ligament surgery, n (%)	31 (45.6)	69 (29.7)	0.015
Collagen plus, n (%) *	10 (14.7)	29 (12.6)	0.643
Glucosamine, n (%) *	7 (10.3)	19 (8.2)	0.595
Cod liver oil, omega3, krill oil, seal oil	32 (50.8)	114 (48.1)	0.704

NSAIDs=nonsteroidal anti-inflammatory drug. *N=1 missing for regular use of NSAIDs, on demand use of NSAIDs, regular use of paracetamol, on demand use of paracetamol, regular use of opioids/opioid-like drugs, on demand use of opioids/opioid-like drugs, regular use of benzodiazepines, on demand use of benzodiazepines, collagen plus, glucosamine. N=3 for customized   aiding tool. N=4 for hand orthosis. N=5 for cortisone injections

DISCUSSION

In the Nor-Hand study, which is a hospital-based study of patients with hand OA, we found that 23% of the participants were using CAM for their OA symptoms. These results are in line with previous studies, which have shown that OA symptoms are among the most common reasons for using CAM(10, 12, 28). The high prevalence of CAM users in our study population is likely due to the lack of very effective symptom-modifying therapies for hand OA.

To our knowledge, the Nor-Hand study is the first specifically comparing demographic and clinical characteristics between hand OA patients using and not using CAM. In line with prior studies (11, 12), our results indicate that women were more likely to report current use of alternative therapies. This confirms the findings form another survey conducted on knee OA patients suggesting that women were more frequent users of different types of CAM for their knee OA symptoms (29). Women may be more active than men in seeking health care, which may explain the observed difference (30).

Whereas no difference in the levels of hand pain was found between users and non-users of CAM, we found that the participants using CAM reported more severe joint pain when taking all joints into account than the patients not using CAM. Users of CAM reported also more symptoms in hips and knees, although statistically significant for stiffness only and borderline statistically significant for pain and physical function. Although the Nor-Hand study is a study on hand OA patients, they frequently have involvement of other joints. In the questionnaire about CAM, the participants were therefore asked about OA in general, and not their hands specifically.

Chronic rheumatic diseases often have an important impact on physical, as well as psychological and social aspects of patients' lives (26). In the Nor-Hand study, the users of CAM reported more comorbidities and anxiety symptoms. These findings support previous research examining patient-reported outcomes among Chinese American rheumatology patients, where the group of patients using traditional Chinese medicine had worse outcomes regarding anxiety, depression, fatigue and ability to participate in social roles and activities (31). Although the participants were questioned about the use of CAM for their OA symptoms only, we cannot rule out that the participants' total burden of disease affected their likelihood of trying CAM in addition to or instead of traditional medicine. Patients might experience that alternative therapists have a more global perspective on the whole patient, taking into account both the joint symptoms and other somatic as well as mental

comorbidities. In addition, persons with higher scores on the HADS anxiety subscale might have worried more about the prognosis of their OA, and therefore visited the alternative therapists. Interestingly, patients using CAM had a statistically significant higher BACQ approach score, compared with the group not using CAM. These results indicate that they have a more approach-orientated behaviour, and these participants might therefore have been more active in their search for potentially effective therapies for the OA symptoms.

Looking at the use of traditional medicine, the CAM user were more frequent users of conventional analgesics and opioids. The users of CAM were also more frequently using non-pharmacological interventions such as hand orthosis and customized aiding tools and they had undergone more surgery on ligaments and joints. In line with previous studies, our findings suggest that CAM therapies are complements but not substitutes of conventional medicine (13, 32). The higher frequency of non-pharmacological, pharmacological and surgical interventions in the CAM users may partly be due to higher levels of symptoms among the CAM users, and partly due to a more approach-seeking personality.

There are some limitations to our cross-sectional study. First, due to its hospital-based study design where all the patients were recruited from an outpatient clinic, the generalisability of the Nor-Hand study is limited as most hand OA patients normally are managed in general practice. Hence the group of patients included in our study might have a higher disease activity than the average hand OA patient. However, we aimed to include a heterogenous group of patients with a wide range of severity, pain intensity and comorbidity. Second, the participants use of CAM was evaluated by self-reported questionnaires and patients may have underreported the actual use of these kind of therapies. Third, the questionnaire in our research asked whether the participants had been using CAM for their joint symptoms during the past 12 months. Patients could conceivably have misread the question as if they had been using CAM for any reason, not only joint symptoms. This issue has been raised in previous studies, which implicates that a validation of these kind of questionnaires needs to be fulfilled in future reviews(11). Last, because CAM use only was explored the past 12 months, we were unable to assess if previous use of CAM possibly could have affected patients' current self-reported health status.

Our findings in the present study have implications for researchers and clinicians. Since hand OA patients are frequent users of CAM, clinicians may need to periodically review their current CAM regimes. Investigating the patients' use of CAM may help clinicians identify those with unmet therapeutic needs.

In conclusion, use of CAM is frequent among hand OA patients in secondary care. CAM users were characterized by having more joint symptoms, more frequent use of conventional medicine for their OA, more comorbidities and anxiety symptoms as well as a more approach-seeking behaviour.

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BEHIND THE STUDY (KAPPE) – "CHARACTERISTICS OF PERSONS WITH HAND OSTEOARTHRITIS USING COMPLEMENTARY AND ALTERNATIVE MEDICINE"

PRECEPT

This cover report presents a summary of the article "Characteristics of persons with hand osteoarthritis using complementary and alternative medicine" as well as a more comprehensive discussion of the work I have performed writing this review. Osteoarthritis (OA) is the most frequent joint disease in developed countries and the prevalence continues to increase due to obesity and an aging population causing major socioeconomic and public health issues. On this basis I will try to put our research into a broader perspective regarding OA and complementary and alternative medicine (CAM).

SUMMARY

The aim of our survey was to obtain a better knowledge of the use of CAM in the treatment of hand OA and what characterizes the group of patients using CAM. Our research is part of the Nor-Hand study, a large hospital-based observational cohort study, including 300 hand OA patients recruited from the rheumatology outpatient clinic at Diakonhjemmet Hospital in Oslo, Norway. The current analyses are based on cross-sectional data from the baseline examination of the patients in 2016-2017. Prior to or just after the clinical examination the participants received numerous standardized questionnaires including demographic questions, question about lifestyle, use of medication, previous surgeries and use of CAM. The patients also answered questions regarding health-related quality of life, psychological health, joint pain and physical function. The study population was divided into two groups, i.e., persons using one or more of ten listed CAMs, and persons not using any CAM for their OA symptoms. The characteristics of the two groups were compared using chi-square tests for categorical variables and t-test or Mann Whitney U-test for continuous variables, as appropriate. The statistical analyses were performed using SPSS version 27 (IBM).

We found that the almost ¼ of the hand OA patients included in the study were using at least one kind of CAM for their joint symptoms the past 12 months and there was a statistically significant higher proportion of women in this group of patients. This is consistent with results from prior reviews. The group of patients using CAM scored higher on comorbidity, anxiety and approach-oriented behavior and they had more severe joint pain overall, whereas no difference was found in the levels of hand pain. They also reported more frequent use of conventional analgesics and opioids as well as non-pharmacological interventions and surgery on ligaments and joints. All together these are important findings indicating that research on CAM among patients with hand OA is an important contribution to the knowledge of the burden and treatment of OA and the hand OA patients in particular.

INTRODUCTION

OA is the most frequent rheumatic joint disease in the developed countries and is the leading cause of disability in older adults. The condition presents clinically with changes to the bone, ligaments, cartilage and synovial tissue, which can be observed using radiography, ultrasonography or MRI. Although the etiology of primary OA remains largely undefined, genetic factors, age-related physiological changes, ethnicity and biochemical factors likely play an important role. Symptomatic hand OA is associated with functional limitations, greater disability and increased health care utilization (1, 2), and symptomatic hand OA has therefore both clinical and public health implications. Even though the disease is more common in the elderly, OA can also occur in the middle-aged population and cause disability and pain impairing the individual´s working capacity. The prevalence of OA will continue to increase globally due to obesity and an aging population and is a major socioeconomic and public health issue.

OA can appear in any synovial joint in the body but is most likely to affect the weight-bearing joints such as the hips and knees, as well as in the spine and hands. Hand OA is one of the most common phenotypes, 14% of women and 7% of men between the ages of 40-84 years have symptomatic hand OA, according to data collected in the population-based Framingham study (3). Another population-based review suggested lifetime risk of developing symptomatic hand OA to be 40% by age 85 years (4). In comparison the lifetime risk of

developing symptomatic knee OA was 45% and symptomatic hip OA 25% in the same population (5, 6). The prevalence estimates for hand OA varies with the population included and the criteria used (7). Hand OA is a heterogenous disorder often involving multiple joints, considered to be multifactorial in etiology. The disease can be defined in numerous ways; by the American College of Rheumatology (ACR) clinical criteria (8), by structural changes determined by imaging using e.g., the Kellengren Lawrence scale (9, 10) or lastly by radiographic changes accompanied by the presence of typical symptoms (pain, aching, stiffness). Although conventional radiographs are commonly used when doubt occurs, hand OA is mainly a clinical diagnosis. Typical radiographic features such as osteophytes, joint space narrowing, subchondral sclerosis and cyst, are used to confirm the diagnosis (11). Individuals with hand OA can be divided into three subgroups depending on the joints affected. Most common is first carpometacarpal (CMC1) joint OA, followed by nodal interphalangeal (IP) joint OA and erosive hand OA respectively.

Despite being a prevalent disease that causes pain, fatigue, functional limitations and reduced health-related quality of life, options to treat patients with OA have been limited and no disease-modifying drugs (DMOADs) currently exist, hence treatment is focused on pharmacological and non-pharmacological symptom -relieving therapies (12, 13). Pain caused by OA is usually treated with oral analgesics and nonsteroidal anti-inflammatory drugs, while in more severe cases orthopedic surgical interventions are required.

Due to its chronic condition and limited symptom relief by conventional medicine and surgical interventions, OA patients are seeking an increasing number of different CAMs. The definition of CAM is not universally agreed upon and most countries have their own way of defining CAM, depending on cultural and political traditions. Since the field is broad and constantly evolving as new alternative options are introduced into the health care system, a true definition of CAM is difficult to find. In our study we chose to use the definition of CAM as "health care practices that are not an integral part of conventional medicine" (14). Previous studies have shown that OA symptoms is among the most common reasons for using CAM (15). Although some studies have explored the rates of CAM used by knee OA patients (16), and others have described the characteristics of arthritis patients in general using CAM (17), little is known about the use of CAM in hand OA.

As far as we are concerned, no previous studies have explored the frequency and characteristics of hand OA patients using CAM in treatment of their symptoms. We therefore wanted to look further into this issue and contribute to the unique research work that has already come out of the Nor-Hand study.

METHOD

With the data collected in the Nor-Hand study in 2016-2017, we had a solid base for performing the research we aimed for. The Nor-Hand study is a large hospital-based observational cohort study, including 300 hand OA patients recruited from a rheumatology outpatient clinic at Diakonhjemmet Hospital in Oslo, Norway. The current analyses are based on a selection of cross-sectional data from the baseline examination of the patients. Eligible patients included men and women (ages 40-70 years) with ≥ 1 IP or thumb base joint with OA, diagnosed clinically and/or by ultrasound. More accurate the clinical criteria included Heberden/Bouchard nodes on the distal/proximal IP joint respectively, and/or bony enlargement, squaring and/or deformity of the thumb base. In addition, there should be little or no clinical signs of inflammatory arthritis in metacarpophalangeal and wrist joints. Individuals with rheumatoid arthritis, spondyloarthritis, psoriatic arthritis, psoriasis or hemochromatosis were excluded to ensure that the selection of patients consisted of primary hand OA patients only. Accordingly, all patients were screened for elevated inflammatory markers, rheumatoid factor and anti-CCP. More detailed inclusion/exclusion criteria have been previously published in the study protocol (18). The participants signed informed consent and the study was approved by the regional ethics committee.

All participants were invited to a test evening at Diakonhjemmet Hospital where they underwent the clinical examinations, performed by one rheumatologist or a rheumatology resident at Diakonhjemmet Hospital, who examined whether the participants fulfilled the clinical American College of Rheumatology criteria (ACR) for OA in hands and knees (8, 19). The overall hand OA disease activity was summarised on a NRS from 0-10. All participants obtained bilateral frontal hand radiographs and the joints were evaluated by an experienced reader using the Kellgren-Lawrence scale (9, 10). To calculate the body mass index (BMI, kg/m^2) weight and height were measured by a trained medical student.

Prior to, or just after the clinical examination, the participants received numerous standardized questionnaires administered in Norwegian in an electronic case report form (eCRF), or alternatively in paper form. The questionnaires included demographic questions, question about lifestyle, use of medication, previous surgeries and the participants use of CAM. In addition, they were asked to answer questions regarding health-related quality of life, psychological health, joint pain and physical function. The participants reported whether they lived in a relationship or not, their highest education level accomplished and current working position.

The questionnaire regarding their use of CAM was developed by National Research Centre for complementary and alternative medicine (NAFKAM) and contained 6 questions about the patients´ self-initiated use of CAM in treatment for their OA. In the first question the patient was asked which out of 10 different alternative therapies he/she had received the past 12 months. The 10 therapies included were acupuncture, homeopathy, reflexology, healing, kinesiology, massage, naprapathy, gestalt therapy, thought field therapy and others. The patients were also asked to list their dietary and herbal supplements. Lastly the patients indicated their effect of CAM.

OA symptoms were self-reported by two different standardized questionnaires. AUSCAN is a disease-specific questionnaire, which measures pain, stiffness and physical function in patients with hand OA during the last 48 hours. The AUSCAN index has been translated into Norwegian and is shown to be valid and reliable (20, 21). Participants also reported their OA symptoms in knees/hips on the Western Ontario and McMaster Universities Arthritis Index (WOMAC) (22). This is again a self-administered questionnaire divided into the subscales of pain, stiffness and physical function. Lastly the participants indicated their pain intensity in the hands and overall, in all joints during the last 24 hours on two separate Numeric Ratings Scales (NRS) from 0 to 10.

Data on comorbidities were collected by having each patient respond to The Self-Administered Comorbidity Questionnaire, which includes 12 of the most prevalent medical conditions in general practice and 3 additional unspecified conditions (23). The questionnaire includes questions about treatment and impact on daily activities giving a total comorbidity index indicating the total burden of the diseases. The participants were also asked to bring their list of medications, including those that were taken regularly and on demand. Numbers

of patients taking oral anaesthetics (non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol, opioid or opioid-like drugs) regularly or on demand were calculated based on screening of the list of medications. The participants use of non-pharmacological interventions like hand-orthosis and customized aiding tools was also reported in the questionnaire.

Psychological health was investigated by asking the patients to answer several different self-reported questionnaires. First the Hospital Anxiety and Depression Scale (HADS) was used to evaluate the patient's levels of anxiety and depression. The questionnaire consists of 14 questions and the sum scores for each of the two subscale range from 0-21 (24). A total score of 8 or more is indicating a further assessment of possible anxiety and/or depression disorder (25). The patients' thoughts and feelings while experiencing pain were investigated using the Pain Catastrophizing Scale (PCS), which is another self-reporting questionnaire consisting of 13 questions divided into subscales of magnification, rumination and helplessness (26). Likewise the patients ability to influence pain was evaluated by the Arthritis Self Efficacy Scale (ASES), originally designed for rheumatoid arthritis and other symptoms of rheumatic diseases (27). The patients also answered the Brief Approach/Avoidance Coping Questionnaire (BACQ), which is a self-reported questionnaire divided into two subscales in order to differ between their approach- versus avoidance-oriented coping behaviour (28, 29). Lastly the participants were asked to indicate their fatigue on a NRS from 0-10, and to respond to one question regarding their sleep quality with response options ranging from normal sleep to severe insomnia. Drinking behaviour was examined with a question about the frequency of alcohol consumption per week (5 categories). In the analyses the variable was dichotomized into 2-4 times per week vs. more seldom. Participants also responded to a question about smoking (4 categories), and the variable was dichotomized into current daily/non-daily smokers vs never/previous smokers in the analyses.

The statistical analyses were performed using SPSS version 27 (IBM), and p-values<0.05 were considered statistically significant. Categorical variables were described with frequencies and percentages, while continuous variables were summarized with either mean (standard deviation, SD) or median (interquartile range, IQR) scores, depending on their distribution. The study population was divided into two groups, i.e., persons using one or more of the ten listed CAMs, and persons not using any CAM for their OA symptoms. The

characteristics of the two groups were compared using chi-square tests for categorical variables and t-test or Mann Whitney test for continuous variables, as appropriate.

RESULTS

Patient characteristics

The vast majority of the patients in the Nor-Hand study were women, and their median age was 61 years. The study population was highly educated with more than half of the participants having at least one year of college or university education. The majority fulfilled the ACR criteria for hand OA, and the level of pain was similar in the hands as in all joints. In general, the scores for anxiety, depression and pain catastrophizing were low, although a wide range was found. Self-reported anxiety symptoms were more common than depressive symptoms and the self-efficacy was high for both pain and total symptoms, while the BACQ approach score was higher than BACQ avoidance. The prevalence of potentially harmful drinking was high within the group, while few participants were smoking.

Table 1: Demographic and clinical characteristics of the 300 participants

Female sex, n (%)	266 (88.7)
Age, median (IQR)	61.0 (56.7-65.9)
Relationship, married or living with partner, n (%) *	197 (70.1)
Higher education (at least one year in University or other higher education), n (%) *	174 (58.2)
Work, with a working position, n (%) *	160 (53.7)
AUSCAN pain (range: 0-20), mean (SD)	8.3 (4.1)
AUSCAN stiffness (range: 0-4), mean (SD)	1.6 (0.9)
AUSCAN physical (range: 0-36), mean (SD)	13.4 (8.1)
WOMAC pain (range: 0-20), median (IQR) *	5.0 (1.0-9.0)
WOMAC stiffness (range: 0-8), median (IQR) *	2.0 (1.0-4.0)
WOMAC physical (range: 0-68), median (IQR) *	9.0 (2.0-17.0)
NRS hand pain (range: 0-10), mean (SD) *	3.7 (2.2)

NRS pain in all joints (range: 0-10), mean (SD) *	3.9 (2.2)
ACR criteria for hand OA, n (%)	278 (92.7)
ACR criteria for knee OA, n (%)	198 (67.8)
KL sum score (range: 0-128), median (IQR)	27.9 (15.0-43.0)
Comorbidity index (range: 0-45), mean (SD)	7.2 (4.2)
HADS anxiety (range: 0-21), median (IQR) *	4.0 (1.0–6.0)
HADS depression (range: 0-21), median (IQR) *	2.0 (1.0-4.0)
Pain catastrophizing scale (PCS) (range: 0-52), median (IQR) *	9.0 (5.0-15.0)
ASES pain (range: 10-100), mean (SD) *	62.8 (16.3)
ASES symptom (range: 10-100), mean (SD) *	73.0 (14.6)
BACQ approach (range: 5-30), mean (SD) *	21.0 (3.2)
BACQ avoidance (range: 5-30), mean (SD) *	16.7 (3.2)
NRS fatigue (range: 0-10), median (IQR) *	4.0 (2.0-6.0)
Sleeping problems, (moderate and severe), n (%) *	122 (40.7)
Body mass index, mean (SD)	26.5 (5.0)
Alcohol, drinking alcohol 2-4 times weekly, n (%) *	120 (40.1)
Current smokers, (daily/non-daily smokers), n (%)	45 (15.0)

HADS=Hospital Anxiety and Depression Scale, BACQ= Brief Approach/Avoidance Coping Questionnaire, ASES=Arthritis Self Efficacy scale, AUSCAN=Australian/Canadian Osteoarthritis hand index, WOMAC= Western Ontario and McMaster Universities Arthritis Index, NRS=Numerical Rating Scale, ACR=American College of Rheumatology, KL=Kellgren-Lawrence rating scale.

* N=1 missing for education, AUSCAN stiffness, NRS hand, WOMAC pain, alcohol, sleep. N=2 missing for work, WOMAC physical, PCS. N=3 missing for BACQ approach and avoidance, NRS all joints, N=4 missing for SES pain and symptom, NRS fatigue. N=8 for ACR knee. N=10 missing for HADS anxiety and depression. N=19 missing for relationship

Frequency of complementary and alternative medicine (CAM)

Frequency analyses showed that 23% of the participants in the Nor-Hand study reported using CAM in treatment of their OA in the past 12 months, with the 2 most frequently used modalities being massage and acupuncture. Two or more different CAMs were used by 8% of the participants, while 1% were using 3 or more modalities.

Table 2: Number (%) of participants using CAM

Acupuncture	28 (9.3)
Homeopathy	3 (1.0)
Reflexology	7 (2.3)
Healing, healing touch, healing reading	5 (1.7)
Kinesiology	0 (0.0)
Massage	37 (12.3)
Naprapathy	8 (2.7)
Gestalt therapy	1 (0.3)
Thought field therapy	0 (0.0)
Other	16 (5.3)

CAM= Complementary and Alternative Medicine

Comparison of demographic and clinical characteristics between patients using and not using CAM

There was a statistically significant higher proportion of women in the group of patients using CAM in treatment of their OA, compared with the group not using CAM. The group of patients using CAM had a higher comorbidity index and also a higher HADS anxiety score. We found that the BACQ approach score was higher among the CAM users than the non-users, indicating a higher approach-oriented coping behaviour within this group of patients. Participants using CAM reported more severe joint pain when taking all joints into account, whereas no difference between the two groups was found in the levels of hand pain in particular. The scores on WOMAC stiffness and pain were both higher within the group of participants using CAM.

Table 3: A comparison of demographic and clinical characteristics between participants using and not using CAM

	Using CAM (n=68)	Not using CAM (n=232)	P-value
Female sex, n (%)	66 (97.1)	200 (86.2)	0.01

Age, median (IQR)	60.9 (56.0-66.8)	61.3 (56.8-65.8)	0.95
Relationship, n (%) living with partner,	35 (60.3)	162 (72,6)	0.07
Education, n (%) with higher education	39 (57.4)	135 (58.4)	0.87
Work, n (%) with a working position	30 (44.1)	130 (56.5)	0.07
AUSCAN pain mean (SD)	8.6 (4.1)	8.1 (4.0)	0.41
AUSCAN stiffness, mean (SD)	1.63 (0.9)	1.66 (1.0)	0.81
AUSCAN function, mean (SD)	14.0 (8.0)	12.8 (7.8)	0.32
WOMAC pain, median (IQR)	6.0 (2.0-10.0)	5.0 (1.0-9.0)	0.09
WOMAC stiffness, median (IQR)	3.0 (2.0-4.0)	2.0 (1.0-4.0)	0.03
WOMAC physical, median (IQR)	10.0 (4.0-22.0)	9.0 (1.1-15.0)	0.11
NRS hand, mean (SD)	3.9 (2.1)	3.7 (2.3)	0.47
NRS all joints, mean (SD)	4.5 (2.0)	3.9 (2.3)	0.04
ACR criteria for hand OA, n (%)	63 (92.6)	215 (92.7)	0.99
ACR criteria for knee OA, n (%)	42 (67.7)	156 (67.8)	0.99
KL sum score (IQR)	24.0 (10.0-36.8)	29.0 (16.0-44.0)	0.09
Comorbidity index, mean SD	9.4 (4.3)	7.2 (4.1)	<0.001
HADS anxiety, median (IQR)	5.0 (2.5-8.0)	3.0 (1.0-6.0)	0.003
HADS depression, median (IQR)	2.0 (1.0-4.0)	2.0 (1.0-4.0)	0.73
Pain catastrophizing scale, median (IQR)	10.0 (5.0-18.0)	9.0 (5.0-14.0)	0.12
ASES pain, mean (SD)	63.6 (16.4)	62.5 (16.2)	0.63
ASES symptom, mean (SD)	72.4 (15.5)	73.1 (14.4)	0.72
BACQ approach, mean (SD)	21.9 (3.3)	20.7 (3.2)	0.007
BACQ avoidance, mean (SD)	17.3 (3.3)	16.6 (3.2)	0.14
NRS fatigue, (IQR)	4.0 (2.0-7.0)	4.0 (2.0-6.0)	0.26
Sleeping problems, n (%)	31 (46.3)	91 (39.2)	0.30
Body mass index, mean (SD)	26.1 (4.7)	26.6 (5.0)	0.43
Alcohol, n (%) drinking alcohol 2-4 times weekly	25 (36.8)	95 (41.1)	0.52
Current smokers, n (%)	10 (14.7)	35 (15.1)	0.94

CAM= Complementary and Alternative Medicine

The use of other treatments by participants using and not using CAM

The CAM users were also more frequent users of conventional analgesics like NSAIDs, paracetamol and opioids/weak opioids than the patients not using CAM, although statistically significant for NSAIDs only. In addition, the CAM users were more frequent users of non-pharmacological interventions such as hand orthosis and customized aiding tools (can openers, knives, cork screws etc) and had undergone more surgery on ligaments and joints. We found no statistically significant difference between the two groups regarding dietary supplements like collagen plus, glucosamine, cod liver oil and other marine oils, taken the past 12 months.

Table 4: The use of other treatments by participants using and not using alternative medicine

	Using CAM	Not using CAM	P-value
Regular use of NSAIDs, n (%) *	7 (10.3)	25 (10.8)	0.901
On demand use of NSAIDs, n (%) *	40 (58.8)	96 (41.6)	0.012
Regular use of paracetamol, n (%) *	4 (5.9)	11 (4.8)	0.710
On demand use of paracetamol, n (%) *	40 (58.8)	116 (50.2)	0.212
Regular use of opioids/opioid-like drugs, n (%)	0 (0.0)	6 (2.6)	0.179
On demand use of opiods/opioid-like drugs, n (%) *	8 (11.8)	16 (6.9)	0.197
Regular use of benzodiazepines, n (%) *	2 (2.9)	5 (2.2)	0.710
On demand use of benzodiazepines, n (%) *	5 (7.4)	10 (4.3)	0.315
Cortisone injections, n (%) *	26 (38.8)	70 (30.7)	0.213
Hand orthosis, n (%) *	24 (36.4)	45 (19.6)	0.004
Customized aiding tool, n (%) *	30 (44.8)	60 (26.1)	0.003
Prosthesis, n (%)	9 (13.2)	27 (11.6)	0.721
Arthrodesis, n (%)	4 (5.9)	16 (6.9)	0.768
Synovectomy, n (%)	6 (8.8)	17 (7.3)	0.683
Other joint or ligament surgery, n (%)	31 (45.6)	69 (29.7)	0.015
Collagen plus, n (%) *	10 (14.7)	29 (12.6)	0.643
Glucosamine, n (%) *	7 (10.3)	19 (8.2)	0.595
Cod liver oil, omega3, krill oil, seal oil	32 (50.8)	114 (48.1)	0.704

NSAIDs=nonsteroidal anti-inflammatory drug. *N=1 missing for regular use of NSAIDs, on demand use of NSAIDs, regular use of paracetamol, on demand use of paracetamol, regular use of opioids/opioid-like drugs, on

demand use of opioids/opioid-like drugs, regular use of benzodiazepines, on demand use of benzodiazepines, collagen plus, glucosamine. N=3 for customized aiding tool. N=4 for hand orthosis. N=5 for cortisone injections

DISCUSSION

Previous studies have shown that OA symptoms are amongst the most common reasons for using CAM (15). In the Nor-Hand study, which is a hospital-based study of patients with hand OA, we found that 23% of the participants were using CAM for their OA symptoms the past 12 months. This is in line with previous research on OA which have shown that OA symptoms are among the most common reasons for using CAM (15, 30, 31). The high prevalence of CAM users in our study population is likely due to the lack of very effective symptom-modifying therapies for hand OA.

A study by the Lapane *et al.* reported a prevalence of 47% for CAM among knee OA patients (32). The difference in CAM frequency between hand and knee OA patients is well attributable to the inclusion of topical agents, rubs, lotions, liniments, creams or oil as a CAM modality in the Lapane *et al* which corresponded to 50% of the total CAM use. This raises the question of what kind of therapies should be included in the CAM category in our study. Cultural, ethnical and political differences may have a substantial impact on the results. One example is a study by Callahan *et al.*, in which praying was included as one of the CAM modalities and consequently raised the frequency of CAM substantially (17). As mentioned earlier, there are no global definition of CAM and even though CAM is prevalent and crosses cultural, ethnic and political boundaries, it may complicate the comparisons. In retro perspective it could have been valuable to investigate more of the patient's cultural, ethnical and political background related to CAM in the present study. This could increase the insight of health behaviors and initiate health care improvements.

In line with prior studies (17, 31), our results indicate that women were more likely to report current use of CAM. This again confirms the findings form another survey conducted on knee OA patients suggesting that women were more frequent users of different types of CAM for their knee OA symptoms (32, 33). Women may be more active than men in seeking health care, which may explain the observed difference. This is supported by prior research on the

topic (34). It was beyond the scope of our research to explore why women were more likely to use CAM. Cha*o et al.* suggested that women were more likely to attribute CAM use to their personal beliefs than to dissatisfaction with conventional medicine (35). The review also showed that reasons associated with personal beliefs were most common across all groups of women regardless of ethnicity (Non-Hispanic Whites, African Americans, Mexican Americans, Chinese Americans). This supports our findings of more frequent use of conventional analgesics and non-pharmacological interventions among the CAM users.

Whereas no difference in the levels of hand pain was found between users and non-users of CAM, we found that the participants using CAM reported more severe joint pain when taking all joints into account than the patients not using CAM. Users of CAM reported also more symptoms in hips and knees, although statistically significant for stiffness only and borderline statistically significant for pain and physical function. Although the Nor-Hand study is a study on hand OA patients, they frequently have involvement of other joints. In the questionnaire about CAM, the participants were therefore asked about OA in general, and not their hands specifically. To the best of our knowledge, no research has been accomplished on the effect of CAM on hand OA symptoms, while there is some evidence that some of the CAM modalities like acupuncture, massage and Thai-Chi have short or mid-term benefits in relieving knee pain caused by OA(36-38). On the other hand, CAM users may be more sensitive to pain or their use of alternative therapies might even increase the pain, both cases may be explanations to our findings. Discussing these subjects are again beyond the scope of our present study and further research on the topic is needed.

Chronic rheumatic diseases often have an important impact on physical, as well as psychological and social aspects of patients' lives (28). In the Nor-Hand study, the users of CAM reported more comorbidities and anxiety symptoms. These findings support previous research examining patient-reported outcomes among Chinese American rheumatology patients, where the group of patients using traditional Chinese medicine had worse outcomes regarding anxiety, depression, fatigue and ability to participate in social roles and activities (39). Although the participants were questioned about the use of CAM for their OA symptoms only, we cannot rule out that the participants' total burden of disease affected their likelihood of trying CAM in addition to or instead of traditional medicine. Patients might experience that alternative therapists have a more global perspective on the whole patient,

taking into account both the joint symptoms and other somatic as well as mental comorbidities. In addition, persons with higher scores on the HADS anxiety subscale might have worried more about the prognosis of their OA, and therefore visited the alternative therapists. Interestingly, patients using CAM had a statistically significant higher BACQ approach score, compared with the group not using CAM. These results indicate that they have a more approach-orientated behaviour, and these participants might therefore have been more active in their search for potentially effective therapies for the OA symptoms.

Looking at the use of traditional medicine, the CAM user were more frequent users of conventional analgesics and opioids. The users of CAM were also more frequently using non-pharmacological interventions such as hand orthoses and customized aiding tools and they had undergone more surgery on ligaments and joints. In line with previous studies, our findings suggest that CAM therapies are complements but not substitutes of conventional medicine (16, 40). The higher frequency of non-pharmacological, pharmacological and surgical interventions in the CAM users may partly be due to higher levels of symptoms among the CAM users, and partly due to a more approach-seeking personality.

Our findings in the present study have implications for researchers and clinicians. Since hand OA patients are frequent users of CAM, clinicians may need to periodically review their current CAM regimes. Investigating the patients' use of alternative therapies may help clinicians identify those with unmet therapeutic needs. Future studies should investigate whether undiagnosed or inadequately treated mental health issues affect OA patients' use of CAM.

The generalizability of the Nor-Hand study is limited due to its hospital-based study design, as most patients with hand OA are being managed in a primary care setting. Hence the group of patients included in our study might have a higher disease activity than the average hand OA patient. However, the aim was to include patients with a broad range of symptoms, and patients with both early and severe hand OA were therefore included in the study. Even if patients with a systemic inflammatory joint disease, psoriasis and haemochromatosis were excluded to ensure that the Nor-Hand study would consist of patients with primary hand OA only, we cannot rule out that some of the patients might develop another joint disease later in life. In future follow-up visits in the Nor-Hand study, the exclusion criteria will be re-

assessed. Another limitation to our study is that the participants use of CAM was evaluated by self-reported questionnaires and patients may have underreported the actual use of these kind of therapies. Cultural differences could make it challenging to assess what is alternative and what is conventional medicine if the therapy is not listed in the questionnaire. One way to come around this issue could have been to interview the participants instead of making them answer the self-reported questionnaires and thereby explore more of the patients' cultural background. The participants' use of CAM was investigated only for the last 12 months which left us unable to assess the implications previous use may have had on current self-reported health status. Lastly the questionnaire in our study asked whether the participants had been using CAM for their joint symptoms during the past 12 months. Patients could conceivably have misread the question as if they had been using CAM for any reason, not only joint symptoms. This issue has been raised in previous studies, which implicates that a validation of these kind of questionnaires needs to be fulfilled in future studies (17).

In our study we found that use of CAM was frequently used among hand OA patients in secondary care and that CAM users were characterized by having more joint symptoms, more frequent use of conventional medicine for their OA, more comorbidities and anxiety symptoms as well as a more approach-seeking behaviour. I hope that our work on hand OA patients and their frequent use of CAM has illuminated some new sides of an important and prevalent disease and that it inspires to further research on the topic.

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BEKREFTELSE FRA VEILEDER

Undertegnede har vært veileder for Marianne Ulrichsen i arbeidet med artikkelen

"Characteristics of persons with hand osteoarthritis using complementary and alternative medicine"

som del av hennes prosjektoppgave på medisinstudiet.

Marianne har jobbet selvstendig med materialet og har deltatt i samtlige faser av arbeidet med artikkelen. Hun vil derfor være førsteforfatter på dette arbeidet. Marianne har hatt hovedansvaret for å utføre de statistiske analysene av de aktuelle data hentet fra Nor-Hand undersøkelsen, ved hjelp av statistikkprogrammet SPSS. Hun har selv tolket resultatene med veiledning fra undertegnede ved behov. Videre har hun satt seg inn i relevant bakgrunnslitteratur fremskaffet av veileder, men mye litteratur er også fremskaffet på eget initiativ. Marianne har hatt hovedansvaret for å utforme artikkelen, og har tolket resultatene vi har kommet frem til i lys av relevant bakgrunnslitteratur og tidligere studier. Artikkelen er nå sendt videre til medforfattere og ventes å publiseres i et fagfellevurdert tidsskrift.

Med vennlig hilsen

Ida Kristin Bos-Haugen

Oslo, 29. januar 2021