**Name of journal: *World Journal of Rheumatology***

**ESPS Manuscript NO: 15497**

**Columns: MINIREVIEWS**

**Complementary medicine use in rheumatology: A review**

Wong WH *et al*. Complimentary medicine use in rheumatology

**Woan H Wong, Anna E Litwic, Elaine M Dennison**

**Woan H Wong, Anna E Litwic,** **Elaine M Dennison,** MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton SO16 6YD, United Kingdom

**Elaine M Dennison,** Victoria University of Wellington, Wellington 6004, New Zealand

**Author contributions:** Wong WH performed literature search under the supervision of Dennison EM, Litwic AE drafted the manuscript; Dennison EM oversaw the project.

**Conflict-of-interest statement:** None to declare.

**Open-Access:** This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Correspondence to:** **Elaine M Dennison, MB BChir MA MSc PhD FRCP, Professor, Honorary Consultant in Rheumatology,** MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital, Tremona Rd, Southampton SO16 6YD, United Kingdom. [emd@mrc.soton.ac.uk](mailto:emd@mrc.soton.ac.uk)

**Telephone:** +44-23-80777624

**Fax:** +44-23-80704021

**Received:** November 28, 2014

**Peer-review started:** November 28, 2014

**First decision:** December 12, 2014

**Revised:** June 27, 2015

**Accepted:** July 29, 2015

**Article in press:**

**Published online:**

**Abstract**

Complementary and alternative medicine (CAM) use is increasing worldwide; specifically it appears that these treatment modalities are popular among rheumatology patients. The most commonly reported CAM therapies are herbal medicines, homeopathy, chiropractic, acupuncture and reflexology. Despite high reported rates of CAM use, the number of patients disclosing use to their rheumatologists remains low. This review highlights rates of current CAM use in rheumatology in studies performed worldwide, and discusses potential reasons for nondisclosure of CAM use to clinicians.

**Key words:** Complementary medicine; Alternative medicine; Rheumatology; Arthritis; Acupuncture

**© The Author(s) 2015.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** Complementary and alternative medicine is widely used among rheumatology patients, who often do not inform their consultants that they are using such therapies. This may reflect a fear that clinicians may not approve, or a lack of awareness that the information may be helpful in their management. Increased awareness of the issue, and better education of clinicians and patients is beneficial.

Wong WH, Litwic AE, Dennison EM. Complementary medicine use in rheumatology: A review. *World J Rheumatol* 2015; In press

**COMPLEMENTARY AND ALTERNATIVE MEDICINE**

Complementary and alternative medicine (CAM) was defined by Ernst E *et al*[1] as “diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frame works of medicine” Although the terms “complementary and alternative” are often used together, their meanings differ; according to the United States National Centre for Complementary and Alternative Medicine (NCCAM), “complementary” refers to using non-mainstream treatment alongside conventional medicine, to better cope with a health condition, whereas “alternative” means using non-mainstream treatment in place of conventional medicine to treat a health condition[2] . A ‘’complementary therapy’’ may provide a patient with an experience that is pleasant in itself, and improves the patient’s ability to cope with a chronic health condition; as the term implies, these therapies are designed to be used alongside conventional therapy. By contrast, an ‘’alternative’’ therapy is designed to be use in place of conventional treatment. Few studies have examined the mechanism of action of these treatments, although some researchers have postulated an effect on immune function, and invocation of the placebo effect. Many therapies discussed here can be used in either way; homeopathy, acupuncture, chiropractic and osteopathy have been used within either a ‘’complementary’’ or ‘’alternative’’ framework.

CAM is often classified into 3 groups: (1) professionally organised alternative therapies such as acupuncture, chiropractic, herbal medicine, homeopathy and osteopathy; (2) complementary therapies, such as aromatherapy, massage, yoga, meditation, hypnotherapy, Alexander technique, shiatsu, reflexology and counselling stress therapy; and (3) alternative disciplines, for example, traditional Chinese medicine, traditional Indian medicine (Ayurveda), anthroposophical medicine, naturopathy as well as crystal therapy, dowsing, iridology and kinesiology[3].

Documentation of CAM use in rheumatology is important because of potential adverse consequences in some groups of rheumatology patients. For example, spinal manipulation applied by chiropractor therapists among rheumatoid arthritis patients with atlanto-axial instability may result in neurological complications[4]. In addition, herbal medications used in CAM may interact with prescribed rheumatology medications[5].

**ROLE OF CAM IN RHEUMATOLOGY**

There is some evidence to suggest efficacy of CAM in rheumatic conditions such as osteoarthritis (OA), rheumatoid arthritis (RA) and other types of arthritis [6-11]. In a recent systematic review that assessed the efficacy of CAM in the management of OA, capsaicin gel and S-adenosyl methionine were shown to be effective in improving pain in this group of patients[7]. Another study suggested that acupuncture and massage therapy were effective in reduction of OA related pain[6]. Finally, in other work administration of rosehip (herbal medicine) was associated with reductions in OA pain compared to placebo[8]. Macfarlane *et al*[9] recently undertook a study aimed to evaluate the evidence supporting or refuting CAM use in the treatment of RA and reported that borage seed oil and thunder god vine reduced symptoms in RA. Practising Iyengar yoga was shown by another group to have a beneficial effect on symptoms of RA[10]. Acupuncture has been demonstrated to be efficacious in crystal arthritis[11] . However, other studies have suggested that the evidence supporting the effectiveness of CAM in RA and OA is more doubtful[12]. Hence the literature around the efficacy of CAM in rheumatology is hotly contested, and studies that consider CAM use are often advertised widely and hence more readily available to patients. The efficacy of CAM in rheumatology is not the focus of this review, which aims rather to highlight the widespread use of these therapies in rheumatology patients.

**PREVALENCE AND PATTERNS OF CAM USE IN RHEUMATOLOGY**

The prevalence of CAM use in the general population is high according to studies worldwide[13-15]. The prevalence of CAM use is reported to be the lowest in England when compared to other European countries, United States, Australia and Japan[16]. The top 5 most commonly reported CAM therapies in the European Union are: herbal medicines, homeopathy, chiropractic, acupuncture and reflexology(Table 1)[17].

Specifically, CAM usage is popular in rheumatology [18]. Several studies have suggested a high prevalence of CAM use in North America and Australia in rheumatology patients[19-22]. The highest prevalence of CAM therapy use in rheumatology patients (94%) was reported in a study by Kronenfeld *et al*[19]. The 3 most popular modalities reported in this study were topical treatments, dietary modification and supplementary vitamins. In another survey of 232 rheumatology patients in the United States, two thirds had used CAM[20].Chiropractic therapy was found to be the most popular and most helpful treatment modality. Patients who had OA were more likely to use CAM regularly. In another OA cohort of patients who were followed for 1 year,44% of patients remained non-users throughout, whereas 12% started CAM, 22% maintained, and 22% stopped use of CAM[21]. Equal numbers of patients started and stopped using electric stimulators and visiting chiropractors during the study period. Although patients most frequently started herbal remedies, dietary supplements and special diets, a similar number discontinued these therapies, suggesting that use of CAM is often transitory. Another study of RA patients found that nutritional supplements and touch therapies (massage, acupuncture and acupressure) were the most widely used in this patient disease group, with mind body techniques more prevalent among younger patients[22]. CAM modalities were found to be used in conjunction with mainstream conventional treatments in early as well as later stages of the disease. CAM usage is also popular among Canadian rheumatology patients; in a study of 235 rheumatology patients, 60% of them had ever used CAM remedies and 79% of these patients had used CAM remedies in the previous 12 months. The study also found that 47% of these patients had tried at least one CAM before their first rheumatology consultation. Results from a nationwide survey in Canada demonstrated that 22% adults with arthritis over 20 years of age had used CAM[ 23]. In this group chiropractic services were used most commonly (59.5%) followed by massage (48.5%), acupuncture (25%) and homeopathy (21%).

CAM is also used widely by rheumatology patients in the Middle East. Patients attending rheumatology clinics in Israel tended to use CAM more often compared to patients seen in primary care, internal medicine and other specialties’[24]; this study indicated that in Israel, CAM was used more frequently by patients with fibromyalgia (58%), in contrast to studies from other countries, where the most common rheumatological diagnoses associated with CAM use were RA and OA[25-28]. In work from Eastern Europe, a study from Turkey reported that 76% (*n* = 250) patients with any form of arthritis used at least one CAM[25]. Most of them used thermal therapy, similar to a comparable study from the United States[29].

Finally, CAM use is also common in Australasia; in one Australian study 82% of RA patients, used more than one CAM after diagnosis and more than half of respondents were current users[30]. The report suggested the most common CAMs used in Australia were dietary manipulation and use of copper bracelets. In contrast, studies in Asian countries suggest other therapies are commonly used. For example in India, Ayurveda and massage therapy were used most commonly (around 80%) in one survey[28]. This may be because the Government of India strongly supports alternative therapies such as Ayurveda, Homeopathy, Siddha and Unani medicine and CAM practices and modern (allopathic) medicine in India run in parallel[31]. Similar observations have been made in Korea, where traditional oriental medical treatment is performed by certified Korea medical doctors and there is a wide acceptance of acupuncture as a basic treatment[32]. By contrast, Japan has a lower prevalence of CAM use (approximately 35%). In Japan, dietary supplements, particularly ginger extracts were the most popular type of CAM[33].

**USERS OF CAM, PATIENTS’ REASONS AND OBJECTIVES FOR USING CAM**

There is a documented variation in the use of CAM among different socio-demographic groups. Women are more likely to use CAM than men[21,23,24,27,29]. There are also differences according to age: middle aged people are most likely to use complementary therapies, while the youngest and oldest age groups are less likely to have done so[23,25,27,29,34]. Ethnic background appears relevant in CAM usage among adults with arthritis; Caucasian individuals are more likely to use CAM than Blacks, Asians and Hispanics[21,34,35]. In recent studies, the use of CAM was explored according to three socio-economic indicators. Researchers reported that the use of CAM increases signiﬁcantly with income, and higher education in most western countries[23,24,34]. This may be because medical insurance does not cover CAM, and hence low-income population groups may not be able to afford it[24].

The aims of trying CAM in rheumatology patients is most commonly reported to be to reduce and control pain and stiffness[20,27,36] Similarly a wide range of reasons have been suggested for discontinuation of CAM therapy, with the lack of effectiveness and high cost of therapy being most common[21]. A common source of information about CAM is by “word of mouth”, *e.g.,* previous experiences from families, relatives, neighbours and friends[24,25,27].

**DISCLOSURE OF CAM USE TO RHEUMATOLOGISTS**

The reported rate of patients disclosing CAM use to rheumatologists ranges from 28% to over 70%[20,28,32, 36,37-40]. Women are more likely to talk about CAM therapy than men[37,38]. In one study, rheumatology patients diagnosed with fibromyalgia were more likely to discuss use of CAM with their physician[20]. When asked directly, many patients suggest that they would welcome and greater involvement of their clinician in providing details of alternative practitioners when requested[39].

**REASONS FOR NOT DISCLOSING USAGE OF CAM TO RHEUMATOLOGISTS**

There are various reasons documented for patients not disclosing their CAM use to clinicians (Table 2). Some patients are concerned about a possible negative response from rheumatologists. This includes the fear that rheumatologists would not continue to provide health care to them or that the rheumatologist would disapprove of them using CAM. Patients may also want to avoid any conflict or embarrassment during their consultation, and may feel that non-disclosure would ensure this.[39,40]. Most rheumatologists do not ask specifically about CAM usage and this may give an impression that the disclosure of the use of CAM is not important in their health care treatment[20,40]. Sleath *et al*[38] suggested that rheumatology patients were more likely to disclose CAM if the rheumatologists involved them in the decision-making process about their treatment and treatment goals.

**ATTITUDES OF RHECAMUMATOLOGISTS TOWARDS CAM**

A recent study suggested that physicians in the United Kingdom have a positive attitude towards some CAM modalities[41]. Among a background prevalence of use of CAM ranging from 12.1% to 32%, 39% to 46% of physicians recommended using CAM.

Similarly, a national survey of rheumatologist in the US showed that more than half of the respondents considered some CAM therapies to be beneficial and were at least moderately likely to recommend them to the patients[42]. Female rheumatologists were significantly more likely than men to perceive common CAM therapies as beneficial. Rheumatologists born outside the United Staes had more favourable attitudes towards CAM overall. Out of 345 rheumatologists, 65% were “very” or “somewhat likely” to recommend body work, followed closely by meditation (64%). Only 10% of them would consider recommending an energy medicine modality, such as Reiki. This could reflect limited availability and experience of this therapy. Massage had the highest perceived benefits, followed by meditation. Acupuncture and spinal manipulation was thought to be either “very” or “moderately” beneficial, whilst 60% of the rheumatologists had indicated that glucosamine and/or chondroitin was not very or at all beneficial.

Another study looked at the referral patterns for 22 CAM therapies[43]. It showed that half of physicians had referred patients for 8 of the therapies (*i.e.,* acupuncture, behavioural medicine, biofeedback, counselling/psychotherapy, dietary prescriptions, electromagnetic applications such as transcutaneous and percutaneous electrical nerve stimulation, exercise and massage). Counselling/psychotherapy and exercise headed the list of modalities which had been used by more than half of the rheumatologists. However other modalities including meditation, prayer and spiritual direction non-chiropractic, hypnotherapy, herbal medicine, music therapy, magnets, energetic healing and homeopathy were never used by 75% of physicians.

These findings were subsequently supported by a systematic review, which concluded that rheumatologists in North America showed moderate acceptance towards some types of CAM, particularly body work and meditation practices[44]. An overwhelming majority of them had recommended these therapies in the past and were willing to continue this practice. That review also indicated that energy medicine had the lowest perceived benefit and received least recommendations and referrals from rheumatologists. A large proportion of rheumatologists had reported no or minor clinical use of CAM therapies such as prayer, spiritual direction and herbal medicine. They believed that the efficacy of these modalities is poor and potentially even harmful.

**CONCLUSION**

Complementary and alternative medicine usage is substantially increasing worldwide. Despite high rates of use of CAM therapies the number of patients disclosing it to their rheumatologists is low. There is a need to promote disclosure, particularly with respect to over the counter preparations that may interact with physician prescribed medication.

**REFERENCES**

1 **Ernst E**, Resch KL, White AR. Complementary medicine. What physicians think of it: a meta-analysis. *Arch Intern Med* 1995; **155**: 2405-2408 [PMID: 7503598 DOI: 10.1001/archinte.1995.00430220059006]

2 **Nation Center for Complementary and Integrative Health.** Complementary, Alternative, or Integrative Health: What's In a Name? Available from: URL: http://nccam.nih.gov/health/whatiscam

3 **Mills SY**. Regulation in complementary and alternative medicine. *BMJ* 2001; **322**: 158-160 [PMID: 11159577]

4 **Beck RW**, Holt KR, Fox MA, Hurtgen-Grace KL. Radiographic anomalies that may alter chiropractic intervention strategies found in a New Zealand population. *J Manipulative Physiol Ther* 2004; **27**: 554-559 [PMID: 15614242 DOI: 10.1016/j.jmpt.2004.10.008]

5 **Holden W**, Joseph J, Williamson L. Use of herbal remedies and potential drug interactions in rheumatology outpatients. *Ann Rheum Dis* 2005; **64**: 790 [PMID: 15834065 DOI: 10.1136/ard.2004.029991]

6 **De Luigi AJ**. Complementary and alternative medicine in osteoarthritis. *PM R* 2012; **4**: S122-S133 [PMID: 22632691 DOI: 10.1016/j.pmrj.2012.01.012]

7 **De Silva V**, El-Metwally A, Ernst E, Lewith G, Macfarlane GJ. Evidence for the efficacy of complementary and alternative medicines in the management of osteoarthritis: a systematic review. *Rheumatology* (Oxford) 2011; **50**: 911-920 [PMID: 21169345 DOI: 10.1093/rheumatology/keq379]

8 **Christensen R**, Bartels EM, Altman RD, Astrup A, Bliddal H. Does the hip powder of Rosa canina (rosehip) reduce pain in osteoarthritis patients?--a meta-analysis of randomized controlled trials. *Osteoarthritis Cartilage* 2008; **16**: 965-972 [PMID: 18407528 DOI: 10.1016/j.joca.2008.03.001]

9 **Macfarlane GJ**, El-Metwally A, De Silva V, Ernst E, Dowds GL, Moots RJ. Evidence for the efficacy of complementary and alternative medicines in the management of rheumatoid arthritis: a systematic review. *Rheumatology* (Oxford) 2011; **50**: 1672-1683 [PMID: 21652584 DOI: 10.1093/rheumatology/ker119]

10 **Evans S**, Moieni M, Taub R, Subramanian SK, Tsao JC, Sternlieb B, Zeltzer LK. Iyengar yoga for young adults with rheumatoid arthritis: results from a mixed-methods pilot study. *J Pain Symptom Manage* 2010; **39**: 904-913 [PMID: 20471550 DOI: 10.1016/j.jpainsymman.2009.09.018]

11 **Lee WB**, Woo SH, Min BI, Cho SH. Acupuncture for gouty arthritis: a concise report of a systematic and meta-analysis approach. *Rheumatology* (Oxford) 2013; **52**: 1225-1232 [PMID: 23424263 DOI: 10.1093/rheumatology/ket013]

12 **Ernst E**, Posadzki P. Complementary and alternative medicine for rheumatoid arthritis and osteoarthritis: an overview of systematic reviews. *Curr Pain Headache Rep* 2011; **15**: 431-437 [PMID: 21979101 DOI: 10.1007/s11916-011-0227-x]

13 **Eisenberg DM**, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, Kessler RC. Trends in alternative medicine use in the United States, 1990-1997: results of a follow-up national survey. *JAMA* 1998; **280**: 1569-1575 [PMID: 9820257 DOI: 10.1001/jama.280.18.1569]

14 **Featherstone C**, Godden D, Gault C, Emslie M, Took-Zozaya M. Prevalence study of concurrent use of complementary and alternative medicine in patients attending primary care services in Scotland. *Am J Public Health* 2003; **93**: 1080-1082 [PMID: 12835187 DOI: 10.2105/AJPH.93.7.1080]

15 **Thomas KJ**, Coleman P, Nicholl JP. Trends in access to complementary or alternative medicines via primary care in England: 1995-2001 results from a follow-up national survey. *Fam Pract* 2003; **20**: 575-577 [PMID: 14507801 DOI: 10.1093/fampra/cmg514]

16 **Hunt KJ**, Coelho HF, Wider B, Perry R, Hung SK, Terry R, Ernst E. Complementary and alternative medicine use in England: results from a national survey. *Int J Clin Pract* 2010; **64**: 1496-1502 [PMID: 20698902 DOI: 10.1111/j.1742-1241.2010.02484.x]

17 **Eardley S**, Bishop FL, Prescott P, Cardini F, Brinkhaus B, Santos-Rey K, Vas J, von Ammon K, Hegyi G, Dragan S, Uehleke B, Fønnebø V, Lewith G. A systematic literature review of complementary and alternative medicine prevalence in EU. *Forsch Komplementmed* 2012; **19** Suppl 2: 18-28 [PMID: 23883941 DOI: 10.1159/000342708]

18 **Ernst E**. Usage of complementary therapies in rheumatology: a systematic review. *Clin Rheumatol* 1998; **17**: 301-305 [PMID: 9776112 DOI: 10.1007/BF01451009]

19 **Kronenfeld JJ**, Wasner C. The use of unorthodox therapies and marginal practitioners. *Soc Sci Med* 1982; **16**: 1119-1125 [PMID: 7112162 DOI: 10.1016/0277-9536(82)90114-9]

20 **Rao JK**, Mihaliak K, Kroenke K, Bradley J, Tierney WM, Weinberger M. Use of complementary therapies for arthritis among patients of rheumatologists. *Ann Intern Med* 1999; **131**: 409-416 [PMID: 10498556 DOI: 10.7326/0003-4819-131-6-199909210-00003]

21 **Rao JK**, Kroenke K, Mihaliak KA, Grambow SC, Weinberger M. Rheumatology patients' use of complementary therapies: results from a one-year longitudinal study. *Arthritis Rheum* 2003; **49**: 619-625 [PMID: 14558046 DOI: 10.1002/art.11377]

22 **Efthimiou P**, Kukar M, Mackenzie CR. Complementary and alternative medicine in rheumatoid arthritis: no longer the last resort! *HSS J* 2010; **6**: 108-111 [PMID: 19784703 DOI: 10.1007/s11420-009-9133-8]

23 **Fautrel B**, Adam V, St-Pierre Y, Joseph L, Clarke AE, Penrod JR. Use of complementary and alternative therapies by patients self-reporting arthritis or rheumatism: results from a nationwide canadian survey. *J Rheumatol* 2002; **29**: 2435-2441 [PMID: 12415605]

24 **Breuer GS**, Orbach H, Elkayam O, Berkun Y, Paran D, Mates M, Nesher G. Use of complementary and alternative medicine among patients attending rheumatology clinics in Israel. *Isr Med Assoc J* 2006; **8**: 184-187 [PMID: 16599054]

25 **Unsal A**, Gözüm S. Use of complementary and alternative medicine by patients with arthritis. *J Clin Nurs* 2010; **19**: 1129-1138 [PMID: 20492058 DOI: 10.1111/j.1365-2702.2009.03111.x]

26 **Alvarez-Hernández E**, César Casasola-Vargas J, Lino-Pérez L, Burgos-Vargas R, Vázquez-Mellado J. [Complementary and alternative medicine in patients attending a rheumatology department for the first time. Analysis of 800 patients]. *Reumatol Clin* 2006; **2**: 183-189 [PMID: 21794326]

27 **Kim HA**, Seo YI. Use of complementary and alternative medicine by arthritis patients in a university hospital clinic serving rheumatology patients in Korea. *Rheumatol Int* 2003; **23**: 277-281 [PMID: 14634787 DOI: 10.1007/s00296-003-0311-6]

28 **Jadhav MP**, Jadhav PM, Shelke P, Sharma Y, Nadkar M. Assessment of use of complementary alternative medicine and its impact on quality of life in the patients attending rheumatology clinic, in a tertiary care centre in India. *Indian J Med Sci* 2011; **65**: 50-57 [PMID: 23196313 DOI: 10.4103/0019-5359.103961]

29 **Tamhane A**, McGwin G, Redden DT, Hughes LB, Brown EE, Westfall AO, Conn DL, Jonas BL, Smith EA, Brasington RD, Moreland LW, Bridges SL, Callahan LF. Complementary and alternative medicine use in African Americans with rheumatoid arthritis. *Arthritis Care Res* (Hoboken) 2014; **66**: 180-189 [PMID: 23983105 DOI: 10.1002/acr.22148]

30 **Kestin M,** Miller L, Littlejohn G, Wahlqvist M. The use of unproven remedies for rheumatoid arthritis in Australia. *Med J Aust* 1985; **143**: 516-518 [PMID: 4069052]

31 **Subbarayappa BV**. Siddha medicine: an overview. *Lancet* 1997; **350**: 1841-1844 [PMID: 9428267 DOI: 10.1016/S0140-6736(97)04223-2]

32 **Lee MS**, Lee MS, Yang CY, Lee SI, Joo MC, Shin BC, Yoo WH, Shin YI. Use of complementary and alternative medicine by rheumatoid arthritis patients in Korea. *Clin Rheumatol* 2008; **27**: 29-33 [PMID: 17541497 DOI: 10.1007/s10067-007-0646-6]

33 **Kajiyama H**, Akama H, Yamanaka H, Shoji A, Matsuda Y, Tanaka E, Nakajima A, Terai C, Hara M, Tomatsu T, Saitoh T, Kamatani N. One third of Japanese patients with rheumatoid arthritis use complementary and alternative medicine. *Mod Rheumatol* 2006; **16**: 355-359 [PMID: 17164996 DOI: 10.3109/s10165-006-0521-3]

34 **Anderson DL**, Shane-McWhorter L, Crouch BI, Andersen SJ. Prevalence and patterns of alternative medication use in a university hospital outpatient clinic serving rheumatology and geriatric patients. *Pharmacotherapy* 2000; **20**: 958-966 [PMID: 10939557 DOI: 10.1592/phco.20.11.958.35257]

35 **Hoerster KD**, Butler DA, Mayer JA, Finlayson T, Gallo LC. Use of conventional care and complementary/alternative medicine among US adults with arthritis. *Prev Med* 2012; **54**: 13-17 [PMID: 21889528 DOI: 10.1016/j.ypmed.2011.08.023]

36 **Klingberg E**, Wallerstedt SM, Torstenson T, Håwi G, Forsblad-d'Elia H. The use of complementary and alternative medicine in outpatients with inflammatory rheumatic diseases in Sweden. *Scand J Rheumatol* 2009; **38**: 472-480 [PMID: 19922024 DOI: 10.3109/03009740902994280]

37 **Wallen GR**, Brooks AT. To Tell or Not to Tell: Shared Decision Making, CAM Use and Disclosure Among Underserved Patients with Rheumatic Diseases. *Integr Med Insights* 2012; **7**: 15-22 [PMID: 23071389 DOI: 10.4137/IMI.S10333]

38 **Sleath B**, Callahan LF, Devellis RF, Beard A. Arthritis patients' perceptions of rheumatologists' participatory decision-making style and communication about complementary and alternative medicine. *Arthritis Rheum* 2008; **59**: 416-421 [PMID: 18311753 DOI: 10.1002/art.23307]

39 **Visser GJ**, Peters L, Rasker JJ. Rheumatologists and their patients who seek alternative care: an agreement to disagree. *Br J Rheumatol* 1992; **31**: 485-490 [PMID: 1628171 DOI: 10.1093/rheumatology/31.7.485]

40 **Robinson A**, McGrail MR. Disclosure of CAM use to medical practitioners: a review of qualitative and quantitative studies. *Complement Ther Med* 2004; **12**: 90-98 [PMID: 15561518 DOI: 10.1016/j.ctim.2004.09.006]

41 **Posadzki P**, Watson LK, Alotaibi A, Ernst E. Prevalence of use of complementary and alternative medicine (CAM) by patients/consumers in the UK: systematic review of surveys. *Clin Med* 2013; **13**: 126-131 [PMID: 23681857 DOI: 10.7861/clinmedicine.13-2-126.]

42 **Manek NJ**, Crowson CS, Ottenberg AL, Curlin FA, Kaptchuk TJ, Tilburt JC. What rheumatologists in the United States think of complementary and alternative medicine: results of a national survey. *BMC Complement Altern Med* 2010; **10**: 5 [PMID: 20109215 DOI: 10.1186/1472-6882-10-5]

43 **Berman BM**, Bausell RB, Lee WL. Use and referral patterns for 22 complementary and alternative medical therapies by members of the American College of Rheumatology: results of a national survey. *Arch Intern Med* 2002; **162**: 766-770 [PMID: 11926849 DOI: 10.1001/archinte.162.7.766]

44 **Grainger R,** Walker J. Rheumatologists' opinions towards complementary and alternative medicine: A systematic review. *Clin Rheumatol* 2014; **33**: 3-9 [DOI: 10.1007/s10067-013-2379-z]

**P-Reviewer:** Mezalek ZT, Song JX **S-Editor:** Tian YL

**L-Editor: E-Editor:**

**Table 1 Usage of complementary and alternative medicine in European Countries[17]**

|  |  |
| --- | --- |
| **Treatment** | **Prevalence of reported use across Europe (%)** |
| Herbal medicine | 5.9-48.3 |
| Homeopathy | 2-27 |
| Chiropractic | 0.4-28.8 |
| Acupuncture | 0.44-23 |
| Reflexology | 0.4-21 |

**Table 2 Reasons for not disclosing usage of complementary and alternative medicine to rheumatologists**

|  |
| --- |
| Physician did not ask |
| Patient thought it unnecessary to talk about it |
| Patient feared negative response from physician |
| Patient had used CAM before seeing physician |
| Patient forgot to discuss |

CAM: Complementary and alternative medicine.